PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA

Mr. Ardyansyah Arthin

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Public Health in Public Health
Common Course
College of Public Health Sciences
Chulalongkorn University
Academic Year 2018

ความลังเลใจในการรับวัคซีนของผู้ปกครองต่อการฉีดวัคซีนหัด หัดเยอรมันในเด็กพื้นที่เขตเมืองในประเทศอินโดนีเซีย

นายอาดายานสยา อาร์ทิน

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
สาขาวิชาสาธารณสุขศาสตร์ ไม่สังกัดภาควิชา/เทียบเท่า
วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2561

Thesis Title	PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA
By	Mr. Ardyansyah Arthin
Field of Study	Public Health
Thesis Advisor	Assistant Professor NUTTA TANEEPANICHSKUL, Ph.D.

Accepted by the College of Public Health Sciences, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Public Health

..... Dean of the College of Public Health Sciences
(Professor SATHIRAKORN PONGPANICH, Ph.D.)

THESIS COMMITTEE

..... Chairman
(MONTAKARN CHUEMCHIT, Ph.D.)

..... Thesis Advisor
(Assistant Professor NUTTA TANEEPANICHSKUL, Ph.D.)

..... Examiner
(Nipunporn Voramongkol, M.D.)

อาดายานสยา อาร์ทิน : ความลังเลใจในการรับวัคซีนของผู้ปกครองต่อการฉีดวัคซีนหัด หัดเยอรมันในเด็กพื้นที่เขตเมืองในประเทศอินโดนีเซีย. (PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA) อ.ที่ปรึกษาหลัก : ณัฏฐา ฐานีพานิชสกุล

บทนำ: การรับวัคซีนถือว่าเป็นหนึ่งในสิ่งสำเร็จที่สำคัญเชิงสาธารณสุข แต่อย่างไรก็ตามยังคนอีกกลุ่มนึงที่มีคำถามที่เกี่ยวกับประโยชน์ของวัคซีนทั้งในระดับโลก รวมถึงประเทศอินโดนีเซีย ซึ่งส่งผลไปถึงปัญหาสำคัญคือ ความมีลังเลใจในการรับวัคซีน การศึกษานี้จึงมีวัตถุประสงค์เพื่อศึกษาสถานะของการรับวัคซีนหัด และหัดเยอรมัน และปัจจัยที่มีความสัมพันธ์ต่อการรับวัคซีน

ระเบียบวิธีวิจัย: การศึกษาภาคตัดขวางในเมืองมากาซะ ประเทศอินโดนีเซียระหว่างเดือนมีนาคม – พฤษภาคม 2562 โดยการตอบแบบสอบถามออนไลน์ กลุ่มตัวอย่างได้ถูกเลือกโดยวิธี การเลือกตัวอย่างแบบลูกโซ่ (Snowball Sampling)ซึ่งได้กลุ่มตัวอย่างทั้งสิ้น 283 คน ซึ่งเป็นไปตามเกณฑ์คัดเข้าดังนี้ คือ เป็นผู้ปกครองของเด็กอายุระหว่าง 1-9 ปีที่อาศัยอยู่ในพื้นที่ศึกษาไม่น้อยกว่า 10 ปี แบบสอบถามประกอบไปด้วย 1. ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม 2. ปัจจัยมีอิทธิพลตามบริบทสังคม 3.ปัจจัยด้านบุคคลหรือกลุ่ม 4.ข้อดีและข้อเสียของการรับวัคซีน และ 5.สถานะการรับวัคซีนของเด็ก การทดสอบไคสแควร์และอัตราส่วนออดถูกนำมาใช้ในการวิเคราะห์เพื่อหาความสัมพันธ์ระหว่างปัจจัยที่มีผลต่อการรับวัคซีนของเด็ก

ผลการศึกษา: ผู้ตอบแบบสอบถามส่วนใหญ่ซึ่งคิดเป็นร้อยละ 78.1 เป็นมารดาของเด็ก ร้อยละ 80.9 ได้ให้วัคซีนหัด และหัดเยอรมันแก่บุตร ผู้ปกครองที่ได้รับการสนับสนุนจากผู้นำมีแนวโน้มที่จะให้บุตรรับวัคซีนหัด และหัดเยอรมันมากกว่าเป็น 3.993 เท่าเมื่อเทียบกับผู้ปกครองที่ไม่ได้รับการสนุบสนุน ผู้ปกครองที่ไม่ได้คำนึงถึงการป้องกันโรคจากการรับวัคซีน กลัวว่าการฉีดวัคซีนจะทำให้บุตรเจ็บเมื่อรับวัคซีน และมีความลำบากต่อการนัดรับวัคซีน มีแนวโน้มจะไม่ให้บุตรเข้ารับวัคซีนหัด และหัดเยอรมัน

บทสรุป: จากการศึกษาครั้งนี้ปัจจัยมีอิทธิพลตามบริบทสังคม ปัจจัยด้านบุคคลหรือกลุ่ม ข้อดีและข้อเสียของการรับวัคซีน มีความสัมพันธ์ต่อการรับวัคซีนของบุตร ดังนั้นนักวิชาการสาธารณสุขระดับพื้นที่ควรจะชี้แนะถึงความสำคัญของวัคซีนหัด และหัดเยอรมันในกลุ่มเด็กเล็ก

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....
ปีการศึกษา 2561 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

6178849253 : MAJOR PUBLIC HEALTH
KEYWORD: MR Vaccine, vaccine hesitancy, measles, rubella, children

Ardyansyah Arthin : PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA. Advisor: Asst. Prof. NUTTA TANEEPANICHSKUL, Ph.D.

Introduction: Although vaccine has been one of the biggest achievements in public health, number of people who still question the benefit of vaccine gets bigger each year, including Indonesia. The reason of this hesitancy toward vaccination is different from each region and makes people either completely accepted it, accept but not sure to completely refuse the vaccine. This research is held to see the vaccination status toward MR vaccine. *Methodology*: A cross-sectional study carried out in Makassar city, Indonesia from March-May 2019 using online self-administered questionnaire. Snowball sampling technique was used. There were 283 respondents who eligible for this study, which are parents/caregiver who lived in Makassar for the last 10 years and has child age 1-9 years old. There are three variable that we want to see association with the MR Vaccination status. From contextual influences variable, there are six parts. On Individual or group influences variable, it has five parts. On vaccine/vaccination variable there are five parts. From each of these parts, it has some questions and all of those questions were analyzed to see the association with MR vaccine status with the p-value <0.2 *Result*: Most of the respondents are the mother of the child 221 (78.1%). Parent who get support from the leader on MR Vaccination are 3.993 times higher to give their children MR Vaccination compare tothe ones that not get support.From the multivariate analysis, we found outthat parents who do not believe that there are other (better) ways to prevent diseasesby vaccine are 0.392times lower to give their children vaccination compare to parentswho believe so.Parentswho fear their child will get hurt during MR vaccination are 0.124 times lower to givetheir children MR vaccine compare to parents who have no fear that their childrenmight get hurt.Parentswho have difficulties to get their children to MR vaccination due to the schedule are0.473times lower compare to those parents who easily follow the MR vaccinationschedule.*Conclusion*: The local authorities to be more introduce the policy and the importance of MR vaccination at the same time with the help of health care workers.

Field of Study:	Public Health	Student's Signature .....
Academic Year:	2018	Advisor's Signature .....

ACKNOWLEDGEMENTS

For this project becomes reality, I own debts of gratitude and thanks to all of these.

Foremost, thank you to ALLAH SWT for all the countless gifts and blessings YOU have offered me. Also many thanks to my family in Indonesia, friends and colleagues.

It is a genuine pleasure to express my gratitude to Asst. Prof. Nutta Taneepanichskul, Ph.D as advisor. Thank you for your patience, motivation and knowledge help me to finish this thesis.

I also would like to say thank you for the thesis committee Montakarn Chuemchit, Ph.D. and Nipunporn Voramongkol M.D. MPH for their encouragements and insightful comments.

To my colleagues at CPHS Chulalongkorn University batch 2018. Thank you, guys. It's been a wonderful year that we had.

Thank you also to all wonderful Ajarns for all the lesson throughout this year.

Last but not least, many gratitude towards my parents in Indonesia. Thank you for your support and patience all these time. To Alfrison Paloga. Thank you for those endless and countless discussion that we had and we're gonna have.

Ardyansyah Arthin

TABLE OF CONTENTS

Page

Chapter 1

Introduction

1.1. Background

How vaccines worked, they're different from the any type of medicines. Vaccine has two degrees: working individually and community as well. Vaccine cannot assure that it will be effective 100%, when it used for the community, vaccines works to prevent, eliminate, and by using vaccine, it has eradication effect also. The high uses of vaccine that has particular effect in order to prevent the spread of the diseases, are needed to lower the disease in the community. The goal is to get immunity from particular disease, more than what has been being predicted before, by doing vaccination program. Several nations that has high vaccine using, might be have some groups which has lower vaccine uptakes. In past decades, these kind of people have been contributed to the outbreak or re-emerge some kind of conditions, like measles, mumps, *Haemophilus influenzae* b, pertussis and polio in nations where these conditions are declared extinct. (SAGE, 2015)

Immunizations program that has been conducted all around the globe have huge effect on behalf of these children health status, preventing disease with this vaccination program is one of the hugest achievements in the field of public health for the last 100 years. But, for the last 20 years or so, the degree of vaccination has been questioned by few groups, regarding how it can be benefit of the children's health in the future (Larson, Jarrett, Eckersberger, Smith, & Paterson, 2014). Right now, many people are having hesitancy doing this vaccination, by not coming at the time of vaccination, and some people even turn down and say no to this program (Dempsey et al., 2011; Gust, Darling, Kennedy, & Schwartz, 2008; Robison, Groom, & Young, 2012).

Currently, the world is facing with a lot of health problems. These problems are from the outbreak diseases that can be preventable by using vaccination. For instance, measles and diphtheria, we also can find the increasing reports on drug-resistant pathogens, numbers of obesity that getting larger, people are unable to activity due to severe pollution and climate change and many humanitarian crisis that currently happen

all over the world. Vaccine hesitancy—reluctant of even refusing vaccine even though the vaccine is something that can easily to get—this can cause re-emerging diseases that can be prevent by using vaccination. Vaccination program is one of the most cost-effective way in order to avoid the disease. Right now, vaccination program can prevent 2-3 million death per year, and additional 1.5 million deaths can be prevented if the coverage global of vaccination program is increase. For instance, measles cases have increase 30% globally. The reason behind these increases are complex. Even the countries that already eliminated those disease, now there was cases of resurgence. Health workers, especially those who stay in those communities, still become the most trusted people for those who seek information regarding vaccination. In order to so so, health worker must provide themselves with the trusted, credible and updated information on vaccine. (Organization, 2019)

In one national survey that had been conducting using 1500 parents of children aged 6 to 23 months in 2010 with the results, 3 % from total response (46%), they had refused any types of vaccine, and 19% from total response are refuse or postpone at least one basic and the most important types of vaccination on the early age of life (McCauley, Kennedy, Basket, & Sheedy, 2012). There also one study that being done in Oregon, United States of America. This study result in the increasing rate of changing schedule of immunization four times more (Robison et al., 2012), in comparison with previous years. Some part of the nation use term “personal believe exemptions” and this term that mean hesitancy in vaccination, had increase more than 5% in school-aged groups. (Larson et al., 2014).

In 31 October 2017, total number of 35.307.148 children in Java have already had MR vaccination, 100.98 % of the total MR target that had been set in September 2017. Government and health care workers are working hard to get more children so they can be protected from measles and rubella by using MR Vaccine. Those MR Vaccines are free of charge from children 9 months to 15 years old in all provinces as part comprehensive strategy to eliminated and control measles and rubella also Congenital Rubella Syndrome. (W. Indonesia, 2017)

These vaccination hesitancy needs a lot of knowledge about the magnitude and what kinds of problems that already happened in the society. We have to identify the basic cause of this problems, with this, we can use many strategies based on the

evidence in order to deal with these problems. After that, we can do monitoring and the final is to have evaluation and determining the impact and it28s sustainability of the intervention. It needed more understanding about the vaccine hesitancy, but one thing for sure that it related so many determinants. These determinants must be viewed in particular systematic ways in order to explore more determinants. For instance, the person, people in a group, contextual influence, and all the problems connected to the vaccine/vaccination. A through diagnosis regarding the underlying reasons, why this vaccine hesitancy or the worst, reject vaccination must be differentiate properly between barriers that has relation with the way they accept the vaccination and also the access to the vaccine. (Omer, Salmon, Orenstein, deHart, & Halsey, 2009)

Definition of Urban based on The Bureau of the Census, says that urban is comprise all the elements: territory, population, and units of house, and minimum 50.000 people, also it must have at least 2,500 or more people who lived outside the urban areas. The word *urban* refers not only to the center of the city, the number of inhabitants and the housing, but also refers to the geographic structure outside the urban area itself. So this term can be used as guidance by others to make identification the exact term to make identification of the areas on the different criteria. (Chapter, n.d)

1.2. Research Question

What are the determinant factors of parental vaccine hesitancy on their children's MR vaccination in urban area of Indonesia?

1.3. Research Gap

MR Immunization program coverage in Indonesia, for the last 10 years (2008-2017) has been successfully cover more than 89%, with the highest coverage is in 2012, which was. 99.3 %. The increasing of MR coverage was started in 2008 and reach its highest coverage in 2012. However, after 2012, there was decreasing number of MR Vaccination coverage in Indonesia for the next 5 years. Which the lowest number of coveraged was on 2017. It was 89.8 %. (Pusdatin, 2018)

1.4. Research Objective

1.4.1. General objective

To find determinant factors of parental vaccine hesitancy on their children MR vaccination in urban area of Indonesia.

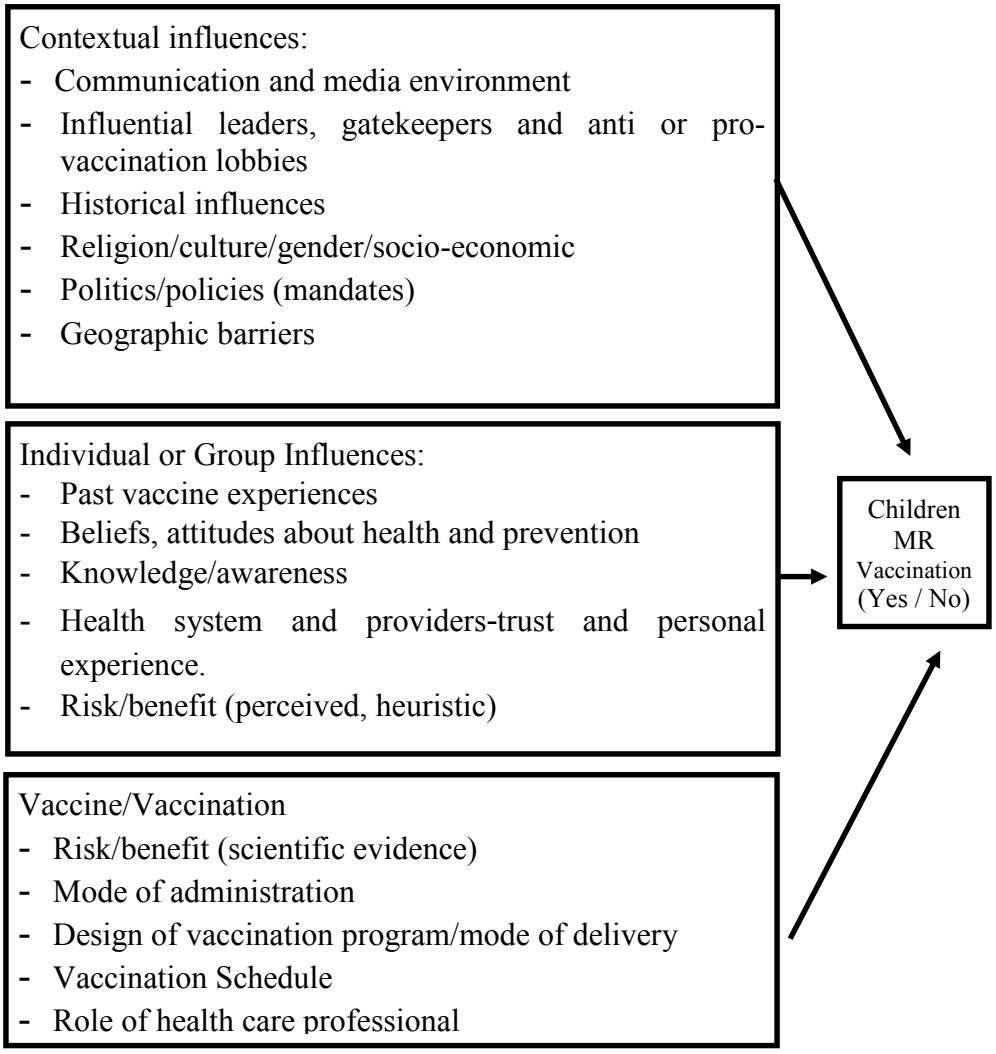
1.4.2. Specific objective

1. To identify the association between contextual influences with parental hesitancy and their children MR vaccination.
2. To identify the association between individual or group influences parental hesitancy and their children MR vaccination.
3. To identify the association between vaccine/vaccination with parental hesitancy and their children MR vaccination.

1.5. Research Hypothesis:

1. There is an association between contextual influences with parental hesitancy and their children MR vaccination.
2. There is an association between individual or group influences with parental hesitancy and their children MR vaccination.
3. There is an association between vaccine/vaccination with parental hesitancy and their children MR vaccination.

1.6. Conceptual framework



1.7. Operational definitions

From the conceptual framework, the research divided into three boxes of category. The first one is the contextual influences, that has the second one is the individual or group influences and the third one is the vaccine/vaccination. All of these three variables connected to the Children MR Vaccination status as “Yes” and “No”.

Urban area: based on Kamus Besar Bahasa Indonesia (KBBI), there are three definition of urban area.

a. urban area is a housing area that consist of different kind of level of society
b. (On the demography definition) It’s a concentration area that has high density and it has modern facility and most of its residents working outside the farming type of work

c. Wall that surrounds the land (Setiawan, n.d)

Dependent Variable

Vaccine hesitancy:

Vaccine hesitancy is defined as postponed on the matter of accepting, include refuse on vaccination program, although it is easy to get vaccine and vaccination services. This problem in vaccine hesitancy area is a complicated but also very specific. It also has variations, from time, place and types of vaccine itself. This situation affected by several elements, like complacency, confidence, and convenience. (WHO, 2018)

In the questionnaire we asked the respondents: Does your child received MR Vaccine? With the answer is Yes / No / Don't Know. Since the dependent variable treated as the dichotomous outcome (yes and no) for analysis part, the answer yes still yes and for no and don't know, the answer we combined as No.

Independent Variable

Contextual influences

- **Communication and media environment**: One of the most important in factors in dealing with vaccination is how media and communication are important tool in order to share and get information on vaccine and also to increase the awareness and motivating others. For example, measles cases that can be one of the leading cause of mortality among young children although the availability of MMR vaccine itself. (Catalan-Matamoros & Peñafiel-Saiz, 2019) Currently, news media are facing different kind of criticism when they reporting health risks, Those news can affect the attitude of the people toward vaccination. (Clarke, 2011) This part is related directly to the media and social media that has two sides of point of view. Media and social media can create the opinion by leaders to effect on other's minds about the good and the bad side of vaccine. In the end it can create and help organization of group of people to against vaccination program.
- **Influential leaders, gatekeepers and anti or pro-vaccination lobbies**: it all included the influences people. From religious leaders to celebrity. They all have an impact in changing minds of people regarding the vaccine. In one research on Vaccine hesitancy analysis WHO/UNICEF joint from 2015-2917, they found out that in 2015, top three reasons in vaccine hesitancy it risk benefit, religion and

influential leaders, immunization program gatekeepers and anti-or pro-vaccination lobbies. (Lane, MacDonald, Marti, & Dumolard, 2018)

- **Historical influences**: This can be defined as event that happened in the past can create some negative effect regarding vaccine in the past. From the report by Wakefield which said that MR Vaccine can cause autism, it can cause the mistrust by the people, this situation is worsened with the people who have media influence or even a leader. This can affect the number of coverage vaccinations. Another one of the important evens regarding on this part is case Trovan trial in Nigeria, where in 1996 they were accused for being testing a new drug without ethical approval for treating meningococcal meningitis. (Wise, 2001)
- **Religion/culture/gender/socio-economic**: These four terms can have connection one to another. Some of the examples regarding to this part of issue are: there are some leader in religion forbid vaccination program, in a rare cultural setting, men are forbided to give vaccination to kids, and also there are patriarchy cultures that the dads do not want their boys to have vaccination. One of the researches regarding religion and vaccination was held in Zimbabwe in 2010-2011 on apostolic faith. They found out that beside Apostolic faith in Zimbabwe, several other religion group, such a. the Dutch Reformed Church in the Bible Belt of the Netherlands, the Amish and Christian Scientists in the U.S., Orthodox Jewish communities in Israel and Belgium, and Muslim communities in Pakistan and Nigeria, have also declined vaccinations due to religious doctrines. (Kriss et al., 2016)
- **Politics/policies (mandates):** Politic/policy has close relationship with the vaccine program and its coverage. It is how government's effort and goal to create immunity herd and also to prevent the spread of vaccine-preventable diseases. Furthermore, this related to the level of safety of the vaccination and also the opposition movement regarding these mandates of vaccination. Moreover, how government apply the regulation and the law regarding vaccination program. One of the researches on this issue is the decision making of RotaShield, which it's include its dose recommendation in United State by government health officials. One thing that make the magnitude of RotaShield is huge is that due to its widely used, there were also quantitative evidence on severity on its risk that has associated with that

vaccine. This then create controversies all over the United States and the nations that has been using the RotaShield. (Schwartz, 2012)

- **Geographic barriers:** This is also one of the problems in dealing with under-immunization that has been happening all over the world. This hesitancy and refusal on vaccination clustered geographically. Most of the family that resides in one particular area, have confidence in vaccine and health care services but the access to the vaccination resources is too far and/or difficult to reach by those people to get vaccine. (Lieu, Ray, Klein, Chung, & Kulldorff, 2015; Rahman, Laz, & Berenson, 2013)

Individual or Group Influences:

- **Knowledge/awareness:** the willing to have vaccination or to reject it is influenced by the knowledge of someone of the group of people. The lack of information, not aware the importance of vaccination, even the misperception can lead in to vaccine hesitancy. (Perlman et al., 2014; Reimer, Schommer, Houlihan, & Gerrard, 2014)
- **Past vaccine experiences:** It is defined and close relation with the memory during vaccination. Good or bad experiences in dealing with the vaccine has effect regarding acceptance and hesitancy to vaccination. Another thing that can affect their level of vaccine hesitancy is the experience personally or knowing someone who have adverse effect after immunization. (Murdin, Barreto, & Plotkin, 1996)
- **Health system and providers-trust and personal experience:** This part has close relation with not able to trust the government on the health system itself. This behavior in the bigger picture can have impact on the level of vaccine acceptance. Other thing that can influences is that the procedures to have vaccination is too troublesome. (MacDonald, 2015)
- **Beliefs, attitudes about health and prevention:** many people still believe that breastfeeding is enough to prevent diseases, or they still using traditional remedies. Furthermore, the rise of people whom to choose to use CAM (Complementary and Alternative Medicine) as their main type of treatment to improve their health. (Downey, Tyree, Huebner, & Lafferty, 2010)
- **Risk/benefit (perceived, heuristic)**: Perception of risk and also the perception of lack of risk will have effect on the willingness to have vaccination. Complacency

will work when the risk-disease perception is low and no need to do vaccination. For example, perception parents or caregiver's perception regarding the nature of their children disease or perception of parent on how danger the vaccine preventable disease is. (Gregory A. Poland & Jacobson, 2001)

Vaccine/Vaccination: directly related to vaccine/vaccination

- **Risk/benefit (scientific evidence):** there are numbers of study regarding risk or benefit and also the level of vaccine safety in the past can influence people to have hesitant to have vaccination. Even though it has been declare regarding to its safety level. In this study, based on the Vaccine Hesitancy Survey Questions Related to SAGE hesitancy matrix, there are two questions and two statements related to risk/benefit (scientific evidence) (Larson, Cooper, Eskola, Katz, & Ratzan, 2011)
- **Mode of administration:** How vaccine is given can affect the level of acceptance in vaccination. For example, parents who don't want to see their children being hurt by injection is rejected the vaccine. But when the vaccination per-oral, they will accept it. Besides that, this part included the skill of health workers. In this study, based on the Vaccine Hesitancy Survey Questions Related to SAGE hesitancy matrix, there are five questions related to mode of administration (Flood et al., 2011)
- **Design of vaccination program/mode of delivery:** some vaccination program is held by doing door-to-door services. This may cause the parents not comfortable. But this is important in places where vaccine cannot be reach easily. In this study, based on the Vaccine Hesitancy Survey Questions Related to SAGE hesitancy matrix, there are five questions related to design of vaccination program/mode of delivery (Pillai, 2015)
- **Role of health care professional:** this is related to how important is health worker. If parents see that they're being not sure in doing their job on vaccination, it can affect the parent's readiness to have vaccine. In this study, based on the Vaccine Hesitancy Survey Questions Related to SAGE hesitancy matrix, there are five questions related to role of health care professional. (Simone, Carrillo-Santisteve, & Lopalco 2012)
- **Vaccination schedule:** Although there is willingness regarding importance of having vaccination to preventing PVD's, there could be a reluctance and even refusal

on doing vaccination because of the schedule of vaccination that being recommended (for example, vaccine multiple times of age of vaccination). Vaccination schedule possesses flexibility times of vaccination that could be adjusted to the patients that need it. Although it can reduce issues regarding of hesitancy, this cannot be applied on the community level. In 2013, a report about vaccination schedule for childhood and its safety describe the complexity of the vaccination schedule. Where there are several mandatory vaccines that has its own schedule. Not only the schedule, but each vaccine has different immune system, depending the age of the child. (Committee on the Assessment of Studies of Health Outcomes Related to the Recommended Childhood Immunization, Board on Population, Public Health, & Institute of, 2013; Jilg, Schmidt, & Deinhardt, 1989).

Chapter 2

Literature Review

2.1. Situation of MR vaccination in children in global and Indonesia

2.1.1. Global

This vaccine hesitancy phenomenon is a complex situation that has close association with social contexts and has different determinants: experience in the past, geographical area, situation of the politics in the area, complacency, convenience and confidence in vaccines itself. The recommendation from World Health Organization (WHO) is that vaccine hesitancy is should be monitored constantly. (Rosselli, Martini, & Bragazzi, 2016)

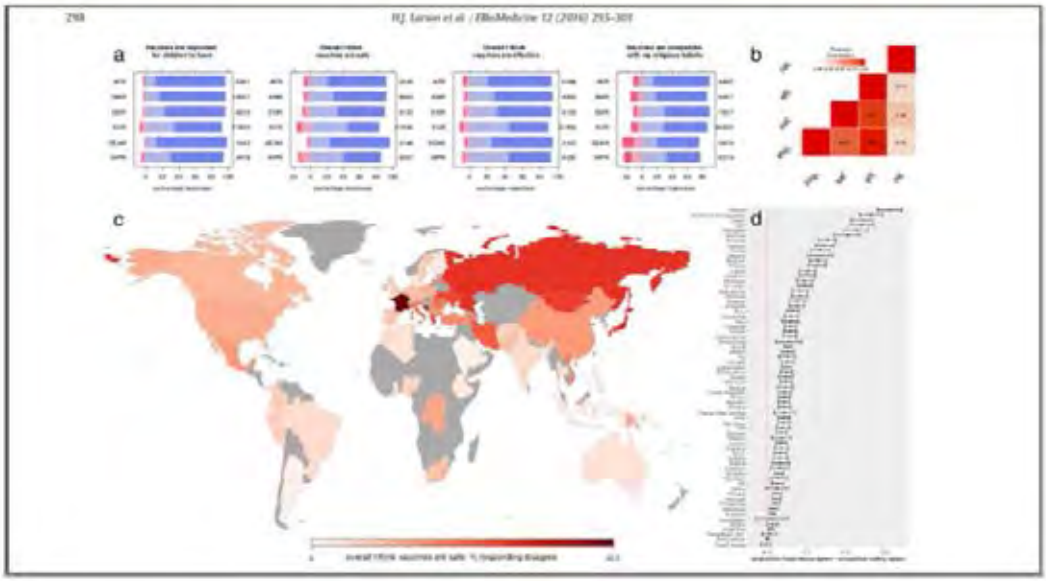
Immunization in the eye of public, regarding to its trust is something that globally important health issue. Loss of confidence in term of immunization and vaccination program can cause vaccine refusal and reluctance. In the end, this can cause high risk of outbreak and make immunization goals are even harder to achieve, both in low- and high-income countries. Immunization stakeholder in scale of national and international have been called in order to make a better monitoring regarding level of vaccine confidence before it come to crisis of vaccine confidence. (Larson et al., 2016). The level of successful vaccination program is at the hand of the people who have good information, enough knowledge and the can embrace the vaccination program to be willing to participate in. (Kaufman et al., 2018)

In one survey about vaccine confidence, involving 67 countries in 2016, they examine perceptions of the importance of vaccine itself, level of vaccine safety, it's effectiveness and based on religious point of view among 65,819 individuals in 76 countries. They used hierarchical models to see relationship between person and country socio-economic factors and attitude towards vaccine, using Likert-scale. (Larson et al., 2016)

On the overall, their attitude regarding vaccination is positive to all 67 countries, but there was a huge variability in those countries and across world regions. On the vaccine-safety itself, it gained negative sentiment in the European region, that counts seven out of the ten countries that has least vaccine confident, with 41% of its

respondents that resident in France and the other 36% of those respondents are live in Bosnia & Herzegovina, they report that they do think that vaccines are safe (compared to an average globally of 13%). The oldest age group of respondents (65+) and Roman Catholics (amongst all faiths that they already surveyed) are tends to have positive point of views regarding vaccine sentiment, while on the Western Pacific countries, reported the highest level of religious incompatibility with vaccines. Countries with high levels of education and also have an excellent to health services are associated with highest level of negative sentiment, clearly showed a direct relationship between vaccine sentiments and socio-economic status. (Larson et al., 2016)

Figure 1. Vaccine level of confidence throughout the world region and the differences between degree of safety and its importance.

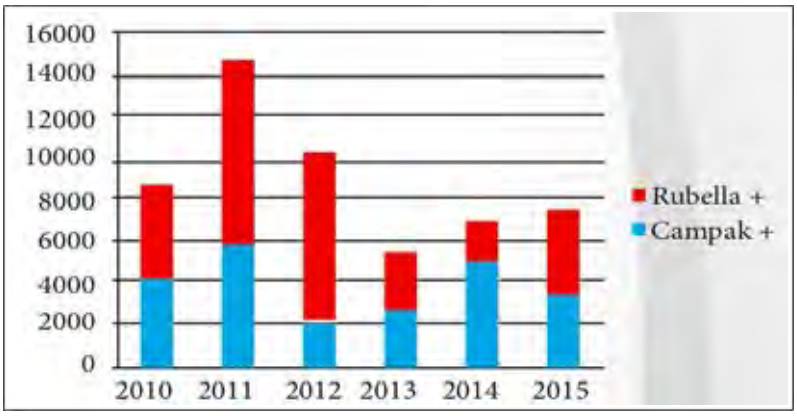


(a) Summary using Likert Scale on world scale. (b) Using Pearson correlation between percentage of respondents across the world that agree ("strongly agree" or "tend to agree) with each statement. (c) Map of the Vaccine regarding negative statement "tend to disagree" or "strongly agree". (d) Differences between proportion of respondents regarding they're believe the importance of vaccine but not-safe (with 95% confidence intervals)

2.1.2. Indonesia

Every year, through surveillance, it is reported that more than 11,000 cases suspected measles and by the laboratory confirmation shows 12-39 % among them are measles, and 16-43 % are rubella. From 2010 to 2015, estimated 23,164 measles cases and 30.463 rubella cases. The numbers of these cases are thought lower than the real

number exactly in the field, with regards of there are still numerous unreported cases, especially from private health care and there are still uncomplete surveillance tools available. In Indonesia, rubella is one of the health problems that require an active prevention action. From surveillance data for the last five years shows that 70% cases of rubella are in young people under 15 years old. Also, based on study about estimation burden CRS (*Congenital Rubella* Syndrome) in Indonesia year 2013, estimated 2,767 CRS cases, 82/100,000 was found in mothers aged 15-19 years old and decreasing to



47/100,000 in mothers aged 40-44 years old. (U. Indonesia, 2019)

Figure 2 Estimation of Measles and Rubella in Indonesia, from 2010-2015

source: (U. Indonesia, 2019)

Figure 3 (left) Coverage Measles Immunization first dose and number of Measles cases 2012-2015 in Indonesia. (right) Analysis of Measles Immunization first dose for each regency 2013-2105 in Indonesia

source: (U. Indonesia, 2019)

From the pictures above, show that there are decreasing in coverage of measles Immunization 2014 and 2015 in Indonesia and the incidence number of measles is increasing. Besides that, percentage of regency that has coverage measles immunization first dose > 95%, tend to decrease from 43% in year 2013 to 28 % in 2015. MR Immunization Campaign is a good opportunity to cover the gap that already mentioned above, so there is no more site pocket that will be the source of outbreak. With the high number of coverage minimum 95%, will form the herd immunity and break the chain of measles and rubella infections (U. Indonesia, 2019).

United States has been one of the highest immunization coverage among children in the world. However, in the past 2 decades, level of concern regarding its safety has been increasing, as a part of the decrease of childhood illnesses that used to be very common. The other cause is that the fact that vaccination program that required healthy people to prevent diseases and most of them are children and most of the time it is mandatory and it was given in the school and day care. Some states are allowing their people to have philosophical exemptions, this is also helping the increasing of concern on vaccination and in the ended it can translate into parents decision on vaccination. One survey that been held in United States regarding why they have this second thoughts about vaccination and why, they collected data from National Survey in 2003-2004. They categorized group of parents who still get their children vaccination but not sure (“unsure”), delayed vaccination (“delayed”) or decided not to give their child vaccination (“refused”) (Dempsey et al., 2011; Gust et al., 2008; Robison et al., 2012).

There is one research on factors influencing vaccine acceptance and hesitancy in Lusaka, Zambia that held in July 2018. It is said that although it is universal coverage on vaccination, there are still low coverage there even though immunization program has been done routinely and free of charge for children and babies since 1970s, it was reported that in 2013-2014, less than 60 % of those children receive the mandatory vaccine by the time 1 year of age. There are several different coverages, with higher uptake with the mother with higher education, live in urban city and high economy status. On the other hand, the lower coverage in sub-population area maybe due to availability of the vaccine or even the vaccine hesitancy itself. Result of this study is that factors that influencing vaccine hesitancy are use of traditional remedy, alcohol

abuse and religious beliefs. Beside that, distrust toward the western medicine. Another factor is fear of the side effect, afraid of injection and thinking that immunization is not important. There is also limitation on their understanding on how vaccine work that another misinformation about medical concept that overlap and then create confusion and in the ended they got the wrong information. (Pugliese-Garcia et al., 2018)

Health consequences related to MR vaccination

The SAGE (Strategic Advisory Group of Experts) Working Group on Vaccine Hesitancy (WG) was established in 2012. The purpose of this WG was to work on vaccination and problems related to it. Including vaccine hesitancy. They came up with a definition of vaccine hesitancy and its scope and then built a model regarding factors related to the decision to accept a vaccine. When WG presented their report to SAGE in October 2014, they also raised a concept of vaccine hesitancy versus vaccination hesitancy. Vaccine hesitancy related to the core issue is vaccine related while vaccination hesitancy involving a much wider factor. For instance, immunization services, time and place of immunization, afraid to the needles, lack of knowledge and also not concern about diseases that can be prevent by vaccine, etc. This group also able to recognize vaccine hesitancy happen along with a continuum process, between fully vaccine acceptance, including high demand for vaccination, and refusal to few or even to all kinds of vaccines (Figure 4). (MacDonald, 2015)

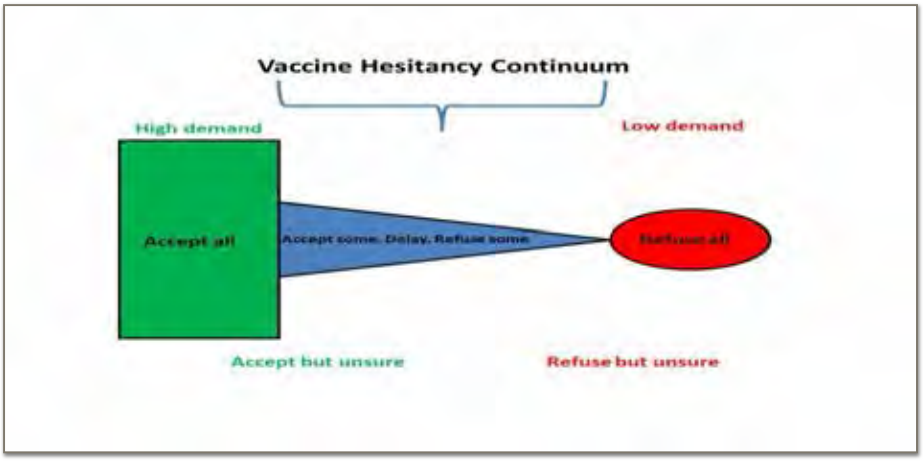


Figure 4: The Continuum of Vaccine Hesitancy between Full Acceptance and Outright Refusal of all Vaccines

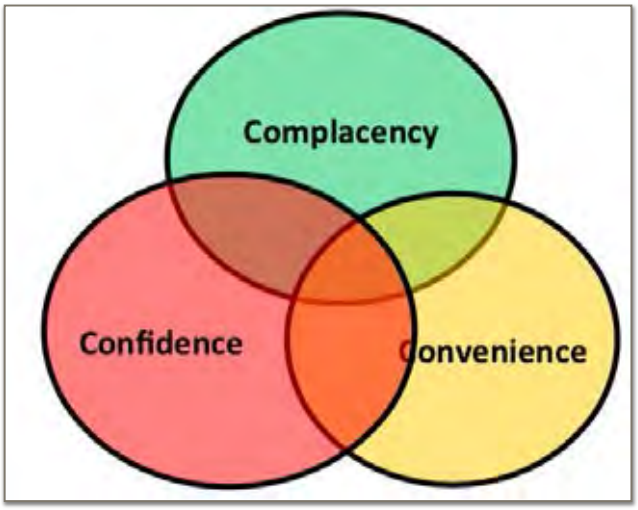


Figure 5: Confidence, Complacency, Convenience Model of Vaccine Hesitancy

Based on the "3Cs" model, ***Confidence*** defined as believe in 1) the level of effectiveness and its safety; 2) system delivery of the vaccine, also the reliability and level of competence of health services and health system providers, and 3) degree of motivation of policy-maker/government regarding who needed vaccination. (MacDonald, 2015)

Complacency exist if diseases that can be prevent with vaccine are low and vaccination is not deemed an important preventive action. Complacency regarding a typical vaccine or vaccination in general that influenced by factors such as responsibility on life/health that can be more important in a period of time. Immunization program can be, paradoxically, and can create complacency and finally, hesitancy, because people compare the risks of vaccines and risk of diseases that something that uncommon. Self-efficacy (self-perceived or ability someone to do vaccination) and influencing level of complacency determines vaccine hesitancy. (MacDonald, 2015)

C***onvenience*** can be measured by the extent physical availability, affordability, and willingness to pay, geographical accessibility and able to understand (by language and knowledge in health) and appeal of the service of immunization services that have effect on the uptake. Level quality of service and the vaccination service level are delivered in time and place and also in a cultural state that convenient and comfortable

can also have effect on the decision making to be vaccinated or the opposite. (MacDonald, 2015)

Measles, mumps, and rubella are three diseases that derived from viral infection that can cause serious some effects. To this day, this condition is still happening in many countries worldwide. (VIS, 2018)

Measles

- This disease can occur and some of its symptoms are: high temperature, cough, runny nose, red and watery eyes, and then a rash showed up all over the body.
- This condition can lead to infection to the ear and can cause pneumonia, diarrhea. In some rare occasion, measles also can cause damage to the brain and death. (VIS, 2018)

Mumps

- This disease can cause high body temperature, headache, pain on the muscles, exhaustion, loss of appetite, and also can cause swollen on the part of salivary glands under ears. This condition may involve one or both sides of the glands. (VIS, 2018)
- Mumps can cause deaf, brain swelling and/or encephalitis or meningitis, there also swelling on the testicles or ovaries that has painful effect. The at the extremely case, death. (VIS, 2018)

Rubella (also known as German Measles)

- Rubella can cause high body temperature, pain in swelling, rash, headache and redness in the eyes (VIS, 2018)
- It can also cause arthritis to almost half of the young age patients and adult age woman.
- If the rubella patient happens to be a pregnant lady, it can cause miscarriage or the baby will have birth defects condition. (VIS, 2018)

These three viral diseases can infect easily from person to person. One of them (measles) don't even need to have personal contact. Someone can get affected if he/she in the same room with the person with measles. Even if the person already left the room couple hours before. (VIS, 2018)

That is why the MR vaccination is so important. Because it's high level of contagiousness.

MR Dose Vaccine

All children must get 2 doses of MR vaccine, typically:

- First given dose: 1 year until 1.3 years of age (12 through 15 months)
- Second dose is given from age 4 through 6 years old

Adults are still need MR Vaccine, because there are many adult patients are still susceptible to these three viral diseases without knowing their condition. They might be recommended to have third dose of MR in particular situation, for instance, if there's outbreak cases. (VIS, 2018)

There is also possibility to have vaccine combination, named: MRV that has MR and chickenpox vaccine in it. This typical vaccine is a good option for some children aged 1 to 12 years old. For further information regarding this kind of special vaccine, you may contact your health service providers near you. (VIS, 2018)

MR Vaccination Requirement in Indonesia

Indonesia committed to reach elimination measles and controlling rubella/Congenital Rubella Syndrome (CRS) in 2020. Indonesia's health department will provide the vaccine free of charge. (U. Indonesia, 2019)

Main Objectives:

1. Increasing people's immunity to measles and rubella in the correct way
2. Break the virus transmission of measles and rubella
3. Lowering the incidence of measles and rubella
4. Lowering in incidence of CRS (U. Indonesia, 2019)

These two mass MR immunization campaigns divided into two steps:

Phase 1: MR immunization is given to all the school. From pre-school to the junior high school. Phase 1 will be held trough out August 2018. Before this phase started, it will need the School Health Units coordination to introduce this program for each school. (U. Indonesia, 2019)

Phase 2: MR immunization to all school kids outside the school, this for children aged 9 months to less than 9 years old in all types of public health services in September 2018. (U. Indonesia, 2019)

It was estimated that the total number of all these children are 67 million, or a quarter of all Indonesia population.

All elements of society must work together in order to make this campaign successful. It is mandatory. No individual informed consent required. (U. Indonesia, 2019)

Theory related to the parental vaccine hesitancy

People who have hesitancy towards to vaccination may only refuse one particular vaccine only. They even accept the other vaccine, depends on the schedule, but some of these people still remain uncertain in doing vaccination. Although the number of people who hesitant with this vaccination is more and more each year, there is some differences between studies about the real meaning of this refusal on vaccination. (Benin, Wisler-Scher, Colson, Shapiro, & Holmboe, 2006; Opel et al., 2011)

One study that's had been conducted to the people who hesitant in MMR vaccine, parents or caregiver who do now want to give their children vaccination is the one who are the qualified ones. (Gowda, Schaffer, Kopec, Markel, & Dempsey, 2014) Also, in another study that conducted in finding the reason why they have this hesitancy, these qualified parents have to be at the time when their children are given the vaccination. This requires one type of vaccine in 6 months (Luthy, Beckstrand, & Meyers, 2013). These two researches enlightened the hesitancy parents, the inclusion criteria is not the same that cause limitation to compare these two research regarding attitudes and perception (Kane, 1998; Opel et al., 2011)

Historical, politic and socio-cultural point of view

People who hesitant with vaccination could be the result on focusing health promotion about the way the life and each of their action regarding health-care, so this means that each person is responsibility with their own action regarding their own health. (Kane, 1998)

The more people who have knowledge, this will make a significant difference on how to make health decision. Doctors used to be the only one who can make the decision, but now, doctors and patients are sharing the decision regarding the patient's health. Patients are now become more active in this step. (Spier, 2001)

There is many false news about the connection between MMR vaccine and incidence of autism. The most recent and well-known is the fraudulent association between the MMR vaccination and autism that was first highly publicized in the United

Kingdom, then it spread very fast around the globe. Nowadays, people still afraid about autism can be the result of vaccination, that is why, this is one of the reasons of vaccine hesitancy. (G. A. Poland & Spier, 2010; Stefanoff et al., 2010)

The importance of media communication

These days, people around the world are now connected to the internet, and the downside of this situation is that it can open the window for groups of people to spread the message about the anti-vaccine. Many of this vaccine hesitancy group of people shared the false evidence regarding vaccine. This is can cause bad impact about the number of people who want to use the vaccine. also, people tend to look information regarding their health condition through internet, not by asking health professionals. Researches has shown that, those people who chooses to postpone the vaccination schedule, they use internet for looking some "answers" regarding vaccine. (Larson et al., 2015). One of influential factor is that involvement of Internet that has become easily accessible for almost people in the world. Their opinion regarding vaccine can make somewhat a huge impact on people who just read news without checking and ask to the health professional. Although people still go seek professional answer from the health worker for their question regarding vaccination, still, internet become the fastest and important source to get the information. Specially these days, where people using many social media platforms such as Twitter, Facebook, Instagram, Line, Whatsapp, etc. (Dube et al., 2013)

Many researchers also put the importance of internet as source of information regarding vaccination. One study in Quebec, Canada regarding vaccine hesitancy and vaccine acceptancy among mothers found out that mostly of them said that internet has the information that they can rely and trust about vaccination. (Dube et al., 2019)

On one study about The Impact of the Web and Social Networks on Vaccination, they found that physicians and other health care professional are still remain the primary source of information for parents and caregiver of the child. Therefore it need communication effort and strategy that has to be rely on those health care workers. In particular, the Internet and social media could be a valuable resource: for example, it can be used as personalized information on their patients, so the patients and the doctor can have a better attitude toward vaccination. (Stahl et al., 2016)

The importance of Public Health and Vaccine Mandates

In the past, vaccination program reached huge numbers of coverage and named one of the most cost-effective programs, because all people welcome when the vaccination schedule is coming. But lately, the growth of new vaccines and being introduced to public via commercials. In America, from 1990 to 2012, there is an increase in number regarding vaccines are being funded by society for children 0 age to 18 years old. The differences in vaccination schedule in each state, some even different in the same territory in the same country, this situation can expand the number of negative opinions about the vaccine and/or the schedule. (Larson et al., 2015)

Some countries have laws to vaccinate children before the school age. This law is to make sure the high coverage of the vaccination. Policies regarding vaccination usually create controversy. That is why, parent who still in doubt about vaccination are tended to believe that vaccines are not safe enough and it has no effect on their children's health. Public health has significant and important role in order to communicate this situation to the society clearly. Surveillance regarding on vaccine's safety is being developed in developing countries, but still these efforts are still unrecognized by the society, and some of them are still not understand enough on this situation, and the worst part is by some small part of health care workers. False information about vaccine's safety level can cause problems to the doctors, government and population as patients. The main example of controversy surrounding vaccine is thimerosal, or mercury that's being used for kept the vaccines. (Larson et al., 2015)

From Health Professionals Point of View

In order to gain the trust from the patients regarding the vaccination, doctors and patients must have a good relationship between both of them. It takes understanding and manners from the professional side in order to reach a good uptake of the vaccine. There's one study conducted in Switzerland' physicians, the result is almost 5% of non-pediatrician doctors refuse MMR vaccine to their own kids. The conclusion of this study is that they afraid there will be too much immune inside their children's body. (Larson et al., 2015)

Although health workers are is the front line for vaccination program, few of them can also have hesitancy for vaccination. This thing can increase the powerful reaction. From feeling overthink it can damage the relationship with the patients. Many of these patients sees health worker as source of information that they can rely on

regarding health information. This include information about vaccination. (Larson et al., 2015)

Hesitant toward vaccination not only at the general population. This is also happened among the health workers themselves. Even the general practitioners two of their main reasons that makes them hesitant are they doubt about its safety and efficacy and their hesitations are mainly because their recommendation behavior. So it is necessary to have these general practitioners to have better education and enough information regarding incidents of diseases and related diseases that can also can occur with it. (Collange et al., 2016)

Individual decision-making

Some literature discussing about factors connected to the level of refuse of accept the vaccine in some developing countries. Most of the discussions are regarding decisions that's being made on vaccines in kids with different age. One of the most important decision is about HPV vaccine or the importance of giving flu vaccine in different sub-population. Majority of level of acceptance is among parents, because these vaccines is for kids and teenagers. Among parents, mother is the main important role if we want to look at the vaccination status. This is because mother is the closest person to the child on their early life. So when we want to discuss about vaccination status of the child, trust is very important. Trust with the health care worker or any important person is the key. Especially for new mothers. In the end, not only provide the types of vaccine that the child need, but also how to develop trusting and to gain positive relationship. (Benin et al., 2006; Opel et al., 2011)

Knowledge/awareness

Not aware enough regarding vaccination and information or even the level of satisfaction about the vaccination are some things that can easily connected to the final decision in doing vaccination of reject it. But, connection between their understanding vaccination and their willing to accept is still not clear enough. There are several researches regarding parents' willingness to vaccinate their kids, although they don't have much understanding about vaccination and how vaccine can prevent some diseases in comparison with parents with enough or even high-level understanding regarding vaccination. (Larson et al., 2015). In 2018, there was a research that studied about knowledge, attitude and practice parents in Arar, Northern Saudi Arabia towards

vaccine to their child, 66.2 % of the respondents know about types of mandatory vaccine that their child need. (Alruwaili et al., 2018)

Past vaccine experiences

One of the most important things dealing with vaccine hesitancy is that past experience dealing with the vaccine itself. For instance, negative experiences when meet the health service. This type of experience can result negative decision regarding willingness to have another type of vaccination in the near future. One of study regarding this issue is the parents are afraid that their children get hurt by injection. (Larson et al., 2015). There also research in Lusaka, Zambia regarding factors influencing vaccine acceptance and hesitancy. They said that fear on needle and injection can be a major role on deciding whether people will fully accept it or hesitant about it but still accepted due to its advantage. (Pugliese-Garcia et al., 2018).

Beliefs, attitudes about health and prevention

Many people still believe that breastfeeding is enough to prevent diseases, or they still using traditional remedies. Another factor that can contribute to this problem is that parents/caregiver unable to believe vaccinating process and worry about the side effect, belief that vaccine-preventable diseases are not serious and believe that if another child is already vaccinated, then his/her child is safe from diseases. In addition to non-medical reason regarding to they're believe in vaccine, there are two non-medical reasons: religious believe and philosophical (personal) beliefs. The religious focus on their faith about something. Sometimes it included doctrine practice on modern vaccine. (Bowes, 2016)

Risk/benefits

Risks in doing vaccination can have impact regarding whether someone want to have vaccination or not. Risks works in two separate paths: people get influenced then doing vaccination or the other way around: refusal. This situation gets more complicated with the fact that it's being given to people with no sickness and facing some risks (true or probably not true), and the other side, the benefits cannot be evaluated from someone's point of view. (Larson et al., 2015)

Health system and providers-trust and personal experience

Perception of risk has close relation with the ideas of believing in health worker, government or in health organization and the relation between all three components. In

a study conducted by Benin and collogues, they found that trust and not trust is a basic and important element for new parents' decision on giving their children vaccine. They come to conclusion is that "trust-based is very good, because these new parents think that the disease will not happening or the disease or will be harmless. (Larson et al., 2015)

Religion/culture/gender/socio-economic

Refusing vaccine program is related with the personal beliefs regarding health and how to get immunity. One of those reason is that they prefer more natural remedy instead artificial (vaccine) medication. Not only personal beliefs, but also religious factors have role in vaccine hesitancy. Rejection on vaccination related to the religious part is the origin of the vaccine itself. (Larson et al., 2015)

There is a research in Malaysia in 2017. They want to see the reason for incomplete primary vaccination. Some of the main result that they found is that the mother had doubt about halal status of the vaccine. They also found the other reason behind it that their religion was not approve them to do vaccination to their child. (Ahmad, Jahis, Kuay, Jamaluddin, & Aris, 2017)

Vaccination Schedule

Vaccine has different schedule and there are some mandatory types of vaccine that child must get depend of their age. Some countries even have policies to make sure the child got those mandatory vaccination to prevent the vaccine-preventable diseases. Not only that, the other factor is each vaccine has different immune response. For example, the MMR vaccine. This vaccination schedule also has correlation with time period which child is already protected which child is not. In the end of this, it can create the herd immunity in the larger population. But this comes with another side. Herd immunity can also get impact if the parents refuses to give their child vaccination if they found out that their child got the side effect after vaccination.

On one study in America regarding Vaccine delays and refusal, this survey on the perspective of the pediatricians, they found out that the parents who delay the vaccination schedule that has been set from CDC are those who may be because of concern for their child discomfort and the parents think it would be not necessary because the burden of immune system. (Hough-Telford et al., 2016)

Chapter 3

Research Methodology

3.1. Research Design

This research study was a cross-sectional study, which conducted during March 2019. The aim of this study was to determine parental vaccine hesitancy and its associated factors on their children MR vaccination status in urban area of Indonesia.

3.2. Study Area

The study conducted in the Makassar City. It is the capital city of South Sulawesi province, which located at the center Indonesia.

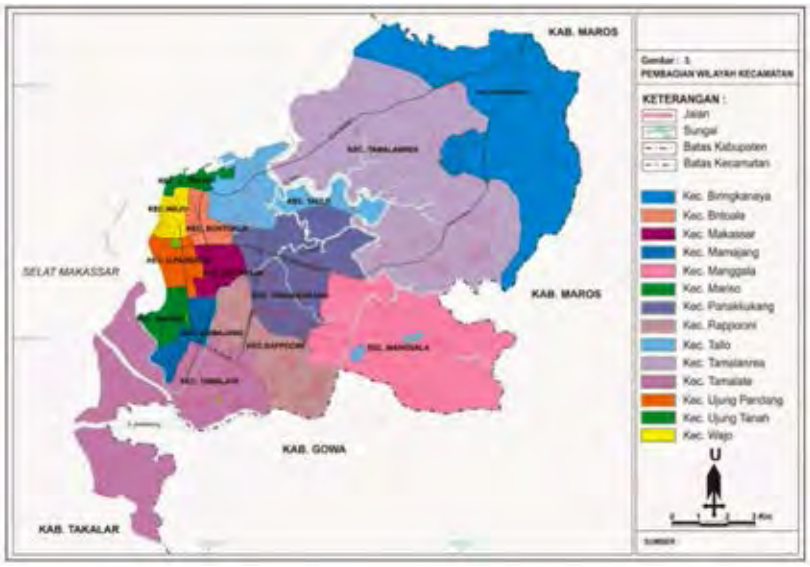


Figure 6 Makassar City Map with the Sub-Districts
Source: (BKPSDMD Kota Makassar, 2019)

3.3. Study Population

Inclusion criteria:

1. Parent(s)/caregiver(s) who have children ages 1 year to not more than 9 years old
2. Parent(s)/caregiver(s) who has children got vaccine in time or delayed due to some diseases/illness
3. Live in Urban Area more than 10 years

Exclusion criteria:

1. Parent(s)/caregiver(s) who refuse to or don't want to be included in this research
2. Parent(s)/caregiver(s) whose children have severe medical condition, such as severe allergy reaction, cancer, HIV or any immune related diseases
3. Has ever had a low platelet count (a blood disorder)
4. Has gotten another vaccine within the past 4 weeks
5. Has recently had a transfusion or received other blood products
6. Has laboratory confirmation of past measles, mumps, or rubella infection. (CDC, 2018)

3.4. Sampling Technique

This study used the Snowball sampling technique. Sending the questionnaire to several people and those people sent it again to another person/people that has connection with the sample population required.

The questionnaire distributed through social media platforms. The first link to the questionnaire first sent Facebook wall, and then put captions about what kind of research and the population that needed, and the other people made comments and copy the link and send it to their group chat and asking people that met the criteria to fill the questionnaire.

3.5. Sample and Sample size (Cochran Formula)

$$\text{Sample size (n)} = \frac{Z^2 (p) (1-p)}{d^2}$$

Where:

n = sample size

Z = acceptable like hood of error at 5% = 1.96

p = expected conversion rate, in this study, we use rate of vaccine hesitancy in Urban Area in Indonesia (Pusdatin, 2018)

d = margin of error (0.05) (Kotrlik & Higgins, 2001)

Using Statulator (Dhand & Khatkar, 2014), assuming that 89% based on MR vaccination coverage 2017 (Pusdatin, 2018) of the subjects in the population have the factor of interest, assuming that expected respond rate of 50%, the study would require a sample size of 301 for estimating the expected proportion with 5% absolute precision and 95% confidence. There were 82 questions in the questionnaire and the respondents

that met the criteria is 283 respondents. Some of the respondent complaints too many questions, they were busy at the time of filling the questionnaire or they even forgot. The other thing was before they filled the questionnaire, we allowed them to leave the questionnaire anytime they want or skip the question that they do not want to answer or if the question made them feel uncomfortable or if there was any personal reason.

3.6. Measurement Tools

Using Using determinants of vaccine hesitancy : Sample Survey Questions (SAGE, 2015). The questionnaire then modified and adjusted with the location of research. The questions in the questionnaire were translated into Bahasa Indonesia language and it's been test for reliability and validity regarding study population which have been approved by one of the experts in Indonesia, drg. Muhammad Ruslin, M. Kes, Sp. BM Ph.D (K).

Part 1: General characteristic

There are 8 (eight) questions regarding general characteristic of this questionnaire. The questions are is it the first born, relationship to the child, age of the parent, marital status, level education of the parent, income, number of children, and race.

Part 2: Vaccination Status

There are 3 questions regarding this part. The questions such as age of the child, does the child already got the MR vaccination and its dose, and what age the child when she/he got the first MR vaccination.

***Part 3*:**

Contextual influences:

1. Communication and media environment
2. Influential leaders, gatekeepers and anti or pro-vaccination lobbies
3. Historical influences
4. Religion/culture/gender/socio-economic
5. politics/policies (mandates)
6. Geographic barriers

***Part 4*:**

Individual or Group Influences:

1. Knowledge/awareness
2. Past vaccine experiences
3. Health system and providers-trust and personal experience.
4. Beliefs, attitudes about health and prevention

***Part 5*:**

Vaccine/Vaccination

1. Risk/benefit (scientific evidence)
2. mode of administration
3. Design of vaccination program/mode of delivery
4. Role of health care professional

3.7. Data Collection

Primary data collected through Google Form that distributed through social media platforms (Facebook, Twitter, Group chat). Despite the convenience factor that using online form in collecting data, there was the down side of it. They were:

a. Respondents may not feel encourage enough to give accurate and/or honest answer
b. They might feel uncomfortable in giving answer that in private questions
c. They may be felt bored. For example, if the questionnaire had too many questions
d. The different interpretation between each respondent can be different. For instance; the option "somewhat agree" can have different meaning to different people.

3.8. Data Interpretation

3.8.1. For the dependent variable, we want to see the vaccination status of the child. From the questionnaire, it is on no.10: *Does your child receive MR Vaccine? (Yes/No/Don't Know).*

3.8.2. Independent variable.

1. If the answer of the question Yes/No/Don't Know, "yes" answer we treated as "yes", "no" and "don't know" answer, we treated as "no".

2. If the answer is in five Likert scale, we treated “Strongly agree” and “agree” as “agree, “not sure” answer as “neutral’ and “disagree” and “strongly disagree” answer as “disagree”
(Jeong & Lee, 2016; Massimi et al., 2017)

3.9. Analysis (Statistics)

Data are analyzed by SPSS program version 22 (Chulalongkorn University license).

3.9.1. Descriptive analysis

Objective of this analysis is to find association between parents/care giver’s hesitancy and their children’s MR Vaccine Status (Yes/No: Dichotomous). In this analysis, we described the dependent and independent variables. Categorical data explained in the shape of number or percentage, and the continuous data presented by mean and standard deviation (if it normal distributed). If the data is skewed, the report be median and IQR.

3.9.2. Bivariate analysis

Chi-square performed for analysis (independent variable: categorical data).

3.9.3. Multivariate analysis

After bivariate analysis, we chose independent variable with p-value <0.2 for multivariate analysis. Binary logistic regression used. Dependent variable treated as dichotomous outcome (Y/N). Statistically significant considered at $p<0.05$.

3.10. Ethical Consideration

The ethical approved from Chulalongkorn University Research Ethics Committee. COA No. 141/2019

3.11. Limitation

1. Limitation by design: this research is Cross-sectional and by using this online survey, it’s hard to find the exact information about cause-and-effect relationship. It is because the cross sectional is the snapshot a single of time.
2. Limitation by study participants: respondents may be not answer honestly or can pose as a different person (not as honest when doing paper-and-pencil surveys)

3. Limitation by online: the survey must be representative to the population. If this is not happen, it can create selection bias.
4. Limitation by distribution: the distribution channels must be the exact, because it can lead low response rate

3.12. Expected Benefit & Application

1. The result can show the MR vaccine status in urban area in Indonesia
2. The data can be used as secondary data about the vaccine hesitancy in Indonesia

3.13. Obstacles and strategies to solve the problem:

1. Solving the demographic limitations by put the city they live for the last 10 years
2. Make a strong password

Chapter 4

Results & Discussion

4.1. Descriptive Analysis

From descriptive analysis, we categorized into five parts. Those parts are general characteristic, vaccination status, contextual influences, individual or group experiences and vaccine/vaccination (specific issue).

4.1.1. General Characteristic

Table 1 General Characteristic of respondents

General Characteristic	n (%)
Relationship with the child (n = 283)	
Mother	221 (78.1)
Father	54 (19.1)
Other	8 (2.8)
Age respondents (n = 283)	
Less than 30	42 (14.8)
≥ 30	241 (85.2)
Marital Status (n = 283)	
Single	4 (1.4)
Widowed	4 (1.4)
Divorce	2 (.7)
Married	273 (96.5)
Educational level (n = 283)	
8th Grade or less	0 (0)
Some high school but not graduate	2 (.7)
High school graduate	16 (5.7.)
Some college or 2-to-4 years of college degree	15 (5.3)

More than 4 years college degree	250 (88.3)
Household income (n = 279)	
Rp. 3.000.000 or less	23 (8.2)
Rp. 3.000.001 - Rp. 5.000.000	84 (30.1)
Rp. 5.000.001 - Rp. 7.500.000	64 (22.9)
Rp. 7.500.001 or more	108 (38.7)
How many children aged 1-9 years old in your household right now? (n = 283)	
One	129 (45.6)
Two	126 (44.5)
Three	27 (9.5)
Four or more	1 (.4)
Ethnical background (n = 283)	
Makassar	54 (19.1)
Bugis	169 (59.7)
Toraja	23 (8.1)
Mandar	8 (2.8)
Other	29 (10.2)
Which sub-districts do you live? (n = 283)	
Biringkanaya	34 (12.0)
Bontoala	8 (2.8)
Makassar	11 (3.9)
Mamajang	8 (2.8)
Manggala	42 (14.8)
Mariso	7 (2.5)
Panakukang	24 (8.5)
Rappocini	56 (19.8)
Tallo	6 (2.1)
Tamalanrea	40 (14.1)
Tamalate	39 (13.8)
Ujung pandang	3 (1.1)

Ujung tanah	3 (1.1)
Wajo	2 (0.7)

Based on the Table 1, most of the respondents were child's mother (78.1%). From the relationship with the child, most of the respondents 78.1 % are the mother of the child. This is quite similar with study in America about vaccination status that said that mother is the one who making decision regarding vaccination of their child (Benin et al., 2006; Opel et al., 2011). On the age of respondents, most of them aged 30 and up 241 (85.2%), From the marital status, most of them were married (96.5%). This is quite similar with the research in Washington DC that has result that most of the respondents are married woman whose aged more than 30 years old (Dempsey et al., 2011; Gust et al., 2008; Robison et al., 2012). Also most of their educational background were more than 4 years degree college degree (88.3%). On the Household income part, there were 108 (38.2 %) respondents has income Rp. 7.500.001 and up. We also asked them about how many children aged 1-9 years old that currently in their household, 129 (45.6 %) answered, there were one child in their household right now. From the ethnical background, most of them are Buginese (59.7 %) and most of the respondents who filled the questionnaire are lived in Rappocini sub-districts (19.8 %). Most of them also Buginese, 169 (59.7 %). In Makassar there are 4 major ethnicity, Buginese, Makassarese, Torajanese and Mandarese, where Buginese is the largest number of population in Makassar. Even in the entire South Sulawesi province, which Makassar is the capital of South Sulawesi (Mattulada, 1982). Of all the respondents that were included in this research are the one that answer the main inclusion criteria question: parent/caretaker who has children aged 1-9 years old and stay in Makassar City for the last 10 years (all $p > .05$). In Makassar, there are 14 sub-districts, and most of the respondents are 56 (19.8 %) living in Rappocini sub-districts. This is same according to the fact that Rappocini is the most highly populated sub-districts in Makassar (BPS Kota Makassar, 2012).

Table 2 Vaccination status (Dependent Variable)

Vaccination Status	N (%)
Does your child received MR vaccine? *Dependent variable* (n = 283)	
Yes	229 (80.9)
No	54 (19.1)
(If only 1 child in the household) How old is the child? (n = 129)	
1-3 years old	58 (45.0)
4-6 years old	40 (31.0)
7-9 years old	31 (24.0)
(If there is more than 1 child in the household) How old is the oldest child? (n = 152)	
1-3 years old	17 (11.2)
4-6 years old	61 (40.1)
7-9 years old	74 (48.7)
How many MR Vaccine dose that they had? (n = 224)	
1 dose	195 (87.1)
2 doses	28 (12.5)
More than 2 doses	1 (.4)

On the vaccination status, from 283 respondents, 229 (80.9) of the parents said that their child had MR Vaccine and the rest are. 54 (19.1%) answered they did not give their child MR Vaccine. The result is quite similar with the result of measles-rubella vaccination coverage in 2018 (Pusdatin, 2019). We also asked them regarding the age of the child. We divided their answer, based on the number or child aged 1-9 years old currently in their house. If they only have 1 child in their household, 58 (45 %) or most of the respondents answered the age is of the child is 1-3 years old. If there is more than 1 child in their household, we asked about the age of the oldest child. There are 74 (48.7%) answered the age is around 7-9 years old. Most of these children are get 1 dose of MR vaccination (68 %).

Indonesia itself has its own policy regarding immunisation. On the Law No.36/2009 on health, it is said that Government has obligation to provide complete immunisation for infants and children in Indonesia. In another chapter, it also said that it is the rightful of every child in Indonesia to get basic immunisation and government must guarantee the availability of safe, high quality, reachable and accessible to all the people in Indonesia to prevent the spread of vaccine-preventable diseases. (D. K. R. Indonesia, 2013)

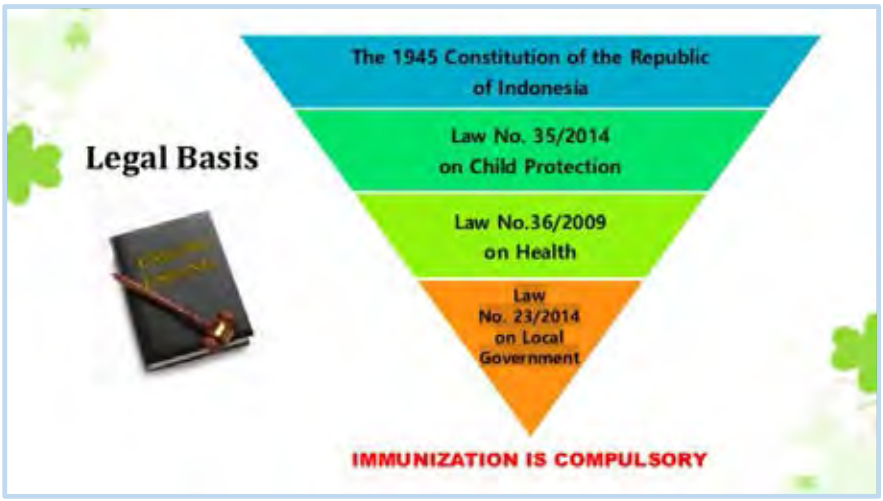


Figure 7 . Legal basis of vaccination
Source: (Yosephine, 2017)

4.1.3. Contextual influences

Table 3 Descriptive analysis of Contextual influences

Contextual influences	**n (%)**
Communication and media environment	
Who do you trust the most for information regarding MR vaccine? (n=283)	
Doctor/Nurse/Midwife	259 (91.5)
Government	8 (2.8)
Religion leaders	11 (3.9)
Celebrity	2 (0.7)
Others	3 (1.1)
Have reports you heard/read on your social media/media made you reconsider the choice to give your children MR Vaccine? (n=283)	

Yes	224 (79.2)
No	59 (20.8)
Do you share information related to MR vaccination within your social media? (n=224)	
Yes	90 (40.2)
No	134 (59.8)
Do you recall MR vaccine that was debated in the media? (n=223)	
Yes	204 (91.5)
No	19 (8.5)
Do you believe in reports in the media by parents claiming to have lost a child to a MR vaccine? (n=224)	
Yes	59 (26.3)
No	165 (73.7)
Influential leaders, gatekeepers and anti-or pro-vaccination lobbies	
Some groups or leaders do not agree to MR vaccination for different reason. In general, do you agree or disagree with these group? (n=279)	
Agree	33 (11.8)
Neutral	76 (27.2)
Disagree	170 (60.9)
Do leaders (religious, political, teacher, health care workers) in your community support MR vaccines for infants and children? (n=281)	
Yes	230 (81.9)
No	51 (18.1)
Would it trigger doubts to have your child vaccinated, if a celebrity advocates against MR vaccine? (n=277)	
Agree	21 (7.6)
Neutral	64 (23.1)
Disagree	192 (69.3)
Has your imam/priest/rabbi ever advocated against MR vaccination? (n=283)	
Yes	73 (25.8)
No	210 (74.2)
Did you follow your imam/priest/rabbi's advice to against MR vaccine? (n=73)	
Yes	23 (31.5)
No	50 (68.5)

Historical influences	
Do you remember any events in the past that would discourage you from getting MR vaccine for your children? (n=278)	
Yes	49 (17.6)
No	229 (82.4)
Has your community in the past refused to accept MR vaccine? (n=278)	
Yes	69 (24.8)
No	209 (75.2)
Has your community ever felt the need to urgently introduce a new vaccine? (n=289)	
Yes	157 (56.3)
No	122 (43.7)
Religion/Culture/Gender/Socio Economic	
Do you know anyone who does not take a MR vaccine because of religious or cultural reasons? (n=281)	
Yes	199 (70.8)
No	82 (29.2)
Does your religion/philosophy/cultural recommend against MR vaccine? (n=279)	
Yes	34 (12.2)
No	245 (87.8)
Have you ever refused a vaccine as you considered it to include porcine or other animal derived ingredients (non-halal)? (n=280)	
Yes	65 (23.2)
No	215 (76.8)
Would you refuse MR vaccine for your child if the vaccinator was male/female or from a different ethnic background/religion than yourself? (n=276)	
Yes	15 (5.4)
No	261 (94.6)
Politics/Policies	
Do you trust, that your government is making decisions in your best interest with respect to what vaccine are provided? (n=277)	
Agree	284 (89.5)

Neutral	26 (9.6)
Disagree	3 (1.1)
Did you ever disagree with the choice of MR vaccine or MR vaccination recommendation provided by your government? (n=274)	
Agree	68 (24.8)
Neutral	82 (29.9)
Disagree	124 (45.3)
I'm convinced that my government purchases the highest quality of MR vaccines. (n=279)	
Agree	211 (75.9)
Neutral	67 (23.7)
Disagree	1 (0.4)
Did you ever have the impression your government/health care provider did not provide you with the best vaccine on the market? (n=277)	
Yes	43 (15.5)
No	234 (84.5)
The only reason I have my child get MR vaccine is so they can enter daycare or school. (n==276)	
Agree	22 (8.0)
Neutral	53 (19.2)
Disagree	201 (72.8)
Does your child's daycare/school require/advice to have your children to get MR vaccine? (n=279)	
Yes	121 (43.4)
No	158 (56.6)
Geographic Barrier	
Has long waiting time at clinic prevented you from getting you child get MR immunization? (n=276)	
Yes	15 (5.4)
No	261 (94.6)
What is the maximum amount of time you would be able or willing to spend to get a vaccine for yourself or your children? (n=269)	
< 30 minutes	124 (46.1)

30 minutes – 1 hour	91 (33.8)
1 hour – 1.5 hours	18 (6.7)
1.5 hours – 2 hours	18 (6.7)
> 2 hours	18 (6.7)
If you have to spend more than 1 hour getting a vaccine, is it important enough to travel for it? (n=277)	
Yes	203 (73.3)
No	74 (26.7)

Note. *n will be different in each part because of rounding, or some respondents skip the questions*

From the table 3, on the Contextual Influences variable, we asked them about who are they trust the most fof information regarding MR Vaccine? Most of them (259 or 91.5%) of them said that doctor/nurse/midwives are people that they trust the most. We also get result that 224 (79.2 %) parents who read/heard report on the media or their social media regarding MR vaccine, it made them reconsider the choice on giving their child MR vaccine. From the question whether they share any information regarding MR Vaccine in their social media, from 224 respondents, 134 (59%) of them answer that they did not do that. This result is similar with the one journal in Canada that discussing about overview of vaccine hesitancy. They said that Internet has created and contributed a larger content regarding vaccine hesitancy due to myths and misbelieved regarding vaccine itself. (Dube et al., 2013). On question regarding if they remember any debate regarding MR Vaccine, 209 (91.5 %) answer that they do not remember such event. We also asked if they agree to some group or leaders who do not agree for MR Vaccination program and we get result that mostly of them or 170 (60.9 %) of respondents do not agree with that kind of leader and groups. On the leader side, most of their leader (81.3%) in the community support MR vaccination program. From question on if they started to doubt if they is celebrity advocates against MR Vaccine, from 277 respondents who answer this question, 192 (69.3 %) of these respondents do not agree with the celebrity. We also asked from the side of religion part. We asked them is their religion leader ever advocate against MR Vaccination and there are 210 (74 %) of the respondents says no about this. There were 73 (25.8 %) out of 283 respondents who answer “YES” from the previous question. We asked them more whether they follow

their religion leader to against MR Vaccine. 50 of them or 68.5% answered that they did not follow it.

From the historical influences. Most of these parent/care giver 229 or 82.4 % do not have any events in the past regarding MR vaccination that would discourage them to give the MR vaccine to their child. We also asked them whether their community in past ever refused MR Vaccine. From 278 respondents, there are 209 (75.2 %) of them said no to this question. Another question on if their community ever feel the need to introduce new vaccine, most of them (157 or 56.3%) said yes to this question.

On the religion/culture/gender/socio-economic point of view, we asked them if they know anyone refuse MR Vaccine because religious or cultural reason. There are 199 (70.8 %) out of 281 respondents answer yes to this question. Another question is if their religion/philosophy/cultural recommend to against MR vaccine. There are 245 (87.8 %) of them answer no. From ingredient of the MR vaccine itself, most of the respondents (76 %) never refuse the MR vaccine because they consider it include porcine or other-animal derived (non-halal). Last question from this variable is we ask them if they refuse MR vaccine for your child if the vaccinator was male/female or from a different ethnic background/religion than yourself. Mostly they answer no (261 or 94.6 %). This is also similar with the one survey about vaccine confidence, involving 67 countries in 2016, that said that Roman Catholics (amongst all faiths that they already surveyed) are tends to have positive point of views regarding vaccine sentiments. (Larson et al., 2015). There is also a similar study regarding vaccine hesitancy around the globe that followed up the WHO/UNICEF joint data from 2015-2016. It is said that from 2014 to 2015, no halal certification of vaccine is one of the top 3 for causing vaccine hesitancy behaviour. But in 2016, halal concern had been carried out and no longer a major concern. (Lane et al., 2018)

Another part from this variable is the from Politics/Policies that relate to the mandates. We asked them if they ever disagree with the choice of MR vaccine or MR vaccination recommendation provided by their government. There are 124 (45 %) of the respondent answer disagree. On the question about their convince and trust on the high quality level of the vaccine that their government provide. Most of them (211 or 75.9%) answer agree to this question. Another question was whether they felt that their

government did not provide them with the best vaccine on the market. 234 or 84.5 % of them answer no. We also asked them that if the parents had their child to get MR Vaccine was because so their child can enter school. Most of them (201 or 72.8 % answer disagree to this question. From the child's day care/school itself, there are 158 (55.8 %) of the respondents said that they did not require/advice their child to get accepted in the school/day care.

From the question regarding how long is maximum waiting time that they can accept. There are 124 46.1 % parents who answer not more than 30 minutes. Furthermore, we asked them if they think MR vaccine is so important so they would spend more than 1 hour to reach place of vaccination. The largest answer is yes. It is 203 (73.3 %) respondents.

4.1.4. Individual and Group Influences

Table 4 Descriptive analysis of Individual and Group Influences

Individual and Group Influences	**n (%)**
Experience with past vaccine	
Do most children tolerate vaccination very well? (n=275)	
Agree	168 (61.1)
Neutral	81 (29.5)
Disagree	26 (9.5)
Have you or someone you know ever had a bad reaction to MR vaccine which made you reconsider getting vaccination? (n=275)	
Yes	25 (9.1)
No	250 (90.9)
Do you know of a child with a serious disease/disability because they were not get MR vaccination? (n=278)	
Yes	89 (32.0)
No	189 (68.0)
Do you know of anyone who has had a bad reaction to MR vaccine shot? (n=277)	
Yes	37 (13.4)
No	240 (86.6)
Have you heard of anyone who was disabled after receiving a MR vaccine? (n=277)	

Yes	82 (29.6)
No	195 (70.4)
Do experiences with pain with the past immunization prevent your child from getting MR immunization? (n=275)	
Yes	12 (4.4)
No	263 (95.6)
Beliefs, attitudes about health and prevention	
Do you think is it possible to have received too many vaccie at one time? (n=275)	
Yes	104 (37.8)
No	171 (62.2)
Do you think MR vaccine overload the immune system? (n=276)	
Yes	29 (10.5)
No	247 (89.5)
Do you believe that there are other (better) ways to prevent diseases which can be prevented by a vaccine? (n=276)	
Yes	68 (24.6)
No	208 (75.4)
Do you believe that it is better for the child to start receive MR vaccine only when over one year of age? (n=275)	
Yes	144 (41.5)
No	161 (58.5)
Knowledge/awareness	
Do you feel that you know which vaccines you should get for your children? (n=275)	
Yes	207 (75.3)
No	68 (24.7)
Do the mass immunization campaigns provide you with sufficient information to address your concern around MR vaccination? (n=276)	
Yes	146 (52.9)
No	130 (47.1)
Did you ever inform yourself on MR vaccine and then decide against it/delay receiving it? (n=277)	

Yes	61 (22.0)
No	216 (78.0)
Do you feel get enough information about MR vaccine and its safety? (n=276)	
Yes	188 (68.1)
No	88 (31.9)
Would you prefer to receive more information on MR vaccination at your health center? (n=275)	
Yes	161 (58.5)
No	114 (41.5)
My health professional provides me with all the information I need to my question on MR vaccine immunization. (n=273)	
Yes	198 (72.5)
No	75 (27.5)
Do you consider that MR vaccine is more important than other? (n=275)	
Yes	42 (15.3)
No	233 (84.7)
Health system and providers-trust and personal experience	
Information on side effects following immunization is discussed openly by the authorities. (n=273)	
Yes	117 (42.9)
No	156 (57.1)
Have you ever felt healthcare professional, government, local authorities are pushing you into a MR vaccination decision you did not fully support? (n=271)	
Agree	26 (9.6)
Neutral	81 (29.9)
Disagree	164 (60.5)
Does having the same provider give all the infant vaccine make you more likely to accept MR vaccine than having a different provider each time vaccine are due? (n=273)	
Agree	150 (54.9)
Neutral	54 (19.8)
Disagree	69 (25.3)

I am able to openly discuss my concerns about MR vaccine shots with my child's doctor. (n=273)	
Agree	219 (80.2)
Neutral	47 (17.2)
Disagree	7 (2.6)
I trust the information I receive about MR vaccine shots. (n=273)	
Agree	230 (84.2)
Neutral	40 (14.7)
Disagree	3 (1.1)
Do you feel that your healthcare provider cares about what is best for your child? (n=271)	
Agree	220 (81.2)
Neutral	49 (18.1)
Disagree	2 (0.7)
Risk/benefits (perceived, heuristic)	
How concern you that MR vaccine shot of the childhood might not be safe? (n=272)	
Concern	72 (26.5)
Neutral	26 (9.6)
Not concern	174 (64.0)
Do you think MR vaccine are still needed even when the disease is no longer prevalent? (n=273)	
Agree	238 (87.2)
Neutral	29 (10.6)
Disagree	6 (2.2)
How concerned are you that your child might have a serious side effect from MR vaccination shot? (n=273)	
Concern	88 (32.2)
Neutral	28 (10.3)
Not concern	157 (57.5)
How concerned are you that MR vaccine shot might not prevent the disease? (n=272)	
Concern	67 (24.6

Neutral	51 (18.8)
Not concern	154 (56.6)
Measles, rubella is not common where I live. That's why I decided against the MR vaccine. (n=272)	
Agree	26 (9.5)
Neutral	41 (15.1)
Disagree	205 (75.4)
Do you believe that MR vaccines are still needed when diseases are rare? (n=274)	
Agree	234 (85.4)
Neutral	34 (12.4)
Disagree	6 (2.2)

From the Individual and Group Influences variable, the first part that we asked them was did their child tolerated their vaccine very well. There was 168 or 61.1 % of the respondents answer agree to this question. Next question is if they know someone who have had bad allergy after MR Vaccination and it made them reconsider their willingness to get MR vaccine. There are 250 (90.9 %) of the respondents said no regarding this question. Another one is that whether they know a child with a serious disease/disability because they were not get MR vaccination, and their response was 189 (68 %) of them answer no. On the question regarding do they know anyone who get bad reaction after get shot by MR Vaccine. From 277 respondents most of them 240 (86.6 %) answer no. Next is regarding get disabled after get MR vaccine. 195 respondents or 70.4 % of them said they never heard that. There was 263 (95.6 %) respondents said that pain during MR vaccination makes them hesitant to get their children MR vaccine. This is quite similar with research Lusaka, Zambia about factors that influencing vaccine acceptance and hesitancy. Fear on needle and injection can be a major role on deciding whether people will fully accept it or hesitant about it but still accepted that vaccination program because its known for the benefit (Pugliese-Garcia et al., 2018)

From beliefs, attitude about health and prevention variable, we ask them do they think is it possible to have received too many vaccine at one time. Most of the

respondents 171 (62.2 %) answer no to this question. On the next question, 247 (89.5 %) of the respondents said that MR vaccine do not overload the immune system. On the question if they know there are other (better) way for the child to prevent diseases beside by vaccination, 208 (75.4 %) of them answer the only way is to do vaccination. It is similar with Journal of Law and the Biosciences on personal believe exemptions and MMR vaccine. They also discuss about non-medical beliefs when it comes to vaccine : religious beliefs and philosophical beliefs. Where these two can be either way to make them accept or refuse the vaccine (Bowes, 2016). On the age of vaccination of their child, mostly respondents answer that it is better for child to get MR vaccination under 1 years old.

From the knowledge/awareness part, we asked them 7 (seven) questions. Most of them (146 (52.9 %) know which vaccines that their children need. The similar types of research regarding on knowledge, attitude and practice parent in Arar, Nothern Saudi Arabia in 2018, 66.2 % of the respondents know about types of mandatory vaccine that their child need (Alruwaili et al., 2018). Regarding sufficient information regarding MR vaccine, 146 (52.9 %) of them said that they got enough information. There are 216 (78 %) of the respondents that said they never search information on MR vaccine and then decided not to have their child vaccination. From their knowledge and its safety, 188 (68.1 %) respondents said that they feel that they get enough information on the safety MR vaccine. We also ask whether they prefer to get more information regarding MR vaccination on health center. There are 161 (58.5 %) of them answer yes to this question. Furthermore, there are 198 (72.5 %) of the respondents said that their health care professional gave them all information regarding MR vaccination. The last question is that if the respondents think that MR vaccine is more important than other vaccine, 233 (84.7 %) of them answer no to this question.

From the Health system and providers-trust and personal part, we asked them if the government did discuss the side effect following MR immunisation. Most of them (156 or 571 %) of the respondents answer no to this question. On the question on what they feel if people being forced to do MR immunisation that they do not fully support, 164 (60.5 %) of the respondents answer they disagree to this question. There are 150 (54.9 %) respondents agree that they tend to go to the same facility/health provider to get vaccination. They also agree (219 or 80.2 %) to the statement that they are able to

discuss their concern on MR vaccination to their doctor. We also asked them if they trust the information that they receive regarding MR vaccine, 230 or 84.2 % of them are agree to this. On their feeling about how health care worker care on whats best for their child, 220 (81.2 %) of them said that they agree to this statement.

The next part is the risk/benefit (perceived, heuristic) of the MR vaccine. There are 174 (64 %) of the respondents not concern about MR vaccine of the childhood might be not safe. They also agree (238 or 87.2 %) on MR vaccine still needed even the disease is no longer prevalent. They also not too concern (157 or 57.5 %) regarding their child might get serious side effect after getting MR vaccine. The respondents are also not too concern (154 or 56.6 %) regarding the MR vaccine shot might not prevent the disease. Even though measles and rubella is not common in the respondents' place to live, they still agree (205 or 75.4 %) to have their child to get MR vaccination. Respondents are also agree (234 or 85.4 %) that they still need MR vaccine even though the diseases are rare.

4.1.5. Vaccine/Vaccination

Table 5 Descriptive analysis of Vaccine/Vaccination

Vaccine/Vaccination	**n (%)**
Risk/Benefit (scientific evidence)	
Do you believe MR vaccines are safe for your children? (n=274)	
Agree	229 (83.6)
Neutral	41 (15.0)
Disagree	4 (1.4)
Me or my child never experienced severe adverse reactions following MR vaccine immunization. (n=269)	
Agree	10 (3.7)
Neutral	68 (25.3)
Disagree	191 (71.0)
Before administering MR vaccine, my healthcare workers (HCW) always provided me with enough information on the side effects that might follow. (n=271)	
Agree	184 (67.9)
Neutral	67 (24.7)
Disagree	20 (7.4)

Mode of administration	
Do you fear pain to your child when receiving MR vaccine shot make you hesitate to do MR immunisation. (n=271)	
Agree	23 (8.5)
Neutral	32 (11.8)
Disagree	216 (79.7)
Has pain following MR vaccine immunization ever made you reconsider to have your child vaccinated? (n=271)	
Agree	29 (10.7)
Neutral	39 (14.4)
Disagree	203 (74.9)
Would you be willing to accept more vaccines for your child if there was no pain involved? (n=269)	
Agree	175 (65.0)
Neutral	47 (17.5)
Disagree	47 (17.5)
Do you trust your healthcare worker to safely administer the MR vaccine to your child? (n=273)	
Agree	239 (87.5)
Neutral	30 (11.0)
Disagree	4 (1.5)
Design of vaccination program/Mode of delivery	
Is the MR vaccination process welcoming? (n=271)	
Yes	233 (86.0)
No	38 (14.0)
Do you want medical consultation on MR vaccination? (n=271)	
Yes	250 (92.3)
No	21 (7.7)
What would you prefer for your child: (n=271)	
Health center/doctor	223 (82.3)
Door to door vaccination	7 (2.6)
Mass vaccination	15 (5.5)

School based program	26 (9.6)
Would you let your child get vaccinated within a school based immunization program? (n=271)	
Yes	193 (71.2)
No	78 (28.8)
Did you ever refrain from having your child MR vaccinated during a mass immunization campagn? (n=271)	
Yes	101 (37.3)
No	170 (62.7)
Vaccination schedule	
Is it difficult to get MR vaccines because of the schedule? (n=268)	
Yes	61 (22.8)
No	207 (77.2)
How sure are you that following the recommended MR vaccine shot schedule is a good idea for your child? (n=269)	
Agree	229 (85.1)
Neutral	36 (13.4)
Disagree	4 (1.5)
Children get more shots than are good for them. (n=267)	
Agree	199 (74.5)
Neutral	62 (23.2)
Disagree	6 (2.3)
It is better for children to get fewer vaccines at the same time. (n=269)	
Agree	78 (29.0)
Neutral	144 (53.5)
Disagree	47 (17.5)
Role of healthcare professionals	
Did healthcare professionals ever treat you without respect (e.g. in regard to your appearance, education or cultural background) that you will hesitate to return to the healthcare facility? (n=270)	
Yes	22 (8.1)
No	248 (91.9)

Did you choose your doctor/healthcare providers based on their willingness to alter or delay the MR vaccination schedule according to your requests? (n=265)	
Yes	57 (21.5)
No	208 (78.5)
Has your healthcare provider ever advised you that MR vaccine was not necessary or had too many side effects? (n=269)	
Yes	8 (3.0)
No	261 (97.0)
Was your doctor ever reluctant to administer MR vaccine you wanted for your child? (n=268)	
Yes	10 (3.7)
No	258 (96.3)

From Vaccine/vaccination part, there are 229 (83.6 %) of the respondents believe MR vaccine is safe. There are 191 (71 %) respondents that are disagree that their child ever get adverse side effect following MR vaccination. They also agree (184 or 67.9 %) that their health care workers always provided them enough information on side effect following MR vaccination. This is quite similar with the research result in Saudi Arabia in Arar and Jeddah, 66.7 % and 83.5 % respectively where parents said that vaccine is safe (Alruwaili et al., 2018).

From mode of administration, mostly (216 or 79.7 %) of the respondents are disagree with the fear their child might get hurt during MR vaccine shot, so they do not bring their child to get MR immunisation. And also they do not agree (203 or 74.9 %) with the statement that say pain after MR vaccination shot made them reconsider their decision to get their child vaccinated. We also asked them if they willing to accept more vaccine for their child if there was no pain involved. Most (175 or 65 %) of them are agreed to this question. Mostly of the respondents also answered agree (239 or 87.5 %) that they trust the health care worker to give MR vaccination safely to their child. Research in Taif, Saudi Arabia also came up with the result that 73 % strongly agreed that vaccine is safe (Alruwaili et al., 2018).

From the design of vaccination/mode of delivery, 233 (86 %) said yes to the MR vaccination process is welcoming. Also they say yes (250 or 92.3 %) on they need medical consultation on MR Vaccination. Mostly of the respondents (223 or 82.3%) prefer health care worker to give MR vaccination to their child, while the other options are school based program (26 or 9.6%), mass vaccination (15 or 5.5%) and door-to-door vaccination (7 or 2.6%). This result is quite similar with the Cochrane systematic review in 2018 about face-to-face intervention for informing or educating parents about early childhood vaccination. They said that the level of successful vaccination program is at the hand of the people who have good information, enough knowledge and the can embrace the vaccination program to be willing to participate in. In this case, it means the parent/caregiver itself (Kaufman et al., 2018). Next, we asked on if the respondents let their child get vaccinated within school-based immunisation program. Most of them (193 or 71.2 %) answer yes to this question. Another question is that whether they ever refrain their child to get MR vaccination during mass immunisation campaign. There are 271 respondents who answer this question and 170 or 62.7 of them answer no to this question. This is quite similar with article about Strategies intended to address vaccine hesitancy, it is said that parents whose fear their child might get hurt can lead into delay of vaccination and eventually lead to vaccine hesitancy (Dubé, Gagnon, & MacDonald, 2015).

Another part from this variable that we asked is that from vaccination schedule. The first question is that is it difficult to get MR vaccine because the schedule?. There are 207 (77.2%) of the respondents said that they do not have any difficulties. Another is that there are 229 (85.1 %) of the respondents agree that they sure on following MR vaccination schedule is good for their child. They also agree (199 or 74.5%) with the statement that say children who get more immunisation shots are good for them. But the respondents are neutral (144 or 53.5%) on the statement that say it is better for children to get fewer vaccines at the same time. This is quite similar with the report of Childhood immunization schedule and safety in 2013 that describing about the range of vaccination schedule where every and each of the vaccine has its own schedule and immune system depends on the child's age (Committee on the Assessment of Studies of Health Outcomes Related to the Recommended Childhood Immunization et al., 2013).

From the role of health care professional part, the first question is that if the health care professional ever treat them without respect that make them hesitate to go back to the health facility. Most of them (248 or 91.9%) answer no to this question. When we ask on their decision to choose health care worker so they can delay or alter the MR vaccination schedule, most of the respondents (208 or 78.5%) say no to answer this question. Most of them also answer no (261 or 97 %) to the question whether the health care worker ever advised them that MR vaccine was not necessary or too many side effects. The last question is that if their health care worker ever reluctant to administer them MR vaccine. Mostly of the respondents (258 or 96.3 %) out of 268 respondents answer no to this question.

4.2. Bivariate analysis (Chi-square Analysis)

4.2.1. Contextual Influences and Vaccination Status

Table 6 Bivariate analysis of Contextual Influences and Vaccination Status

Contextual Influences		**Vaccination Status**		**x^2 p-value**
		No (n %)	**Yes (n %)**	
Communication and media environment				
Who do you trust the most for information regarding MR vaccine?	Non-health workers	11 (45.8)	13 (54.2)	<0.001
	Health workers	43 (16.6)	216 (83.4)	
Have reports you heard/read on your social media/media made you reconsider the choice to give your children MR Vaccine?	No	5 (8.5)	54 (91.5)	0.020
	Yes	49 (21.9)	175 (78.1)	
Do you share information related to MR vaccination within your social media?	No	37 (27.6)	97 (72.4)	0.011
	Yes	12 (13.3)	78 (86.7)	
Do you recall MR vaccine that was debated in the media?	No	6 (31.6)	13 (68.4)	0.265*
	Yes	42 (20.6)	162 (79.4)	
Do you believe in reports in the media by parents claiming to have lost a child to a MR vaccine?	No	26 (15.8)	139 (84.2)	<0.001
	Yes	23 (39.0)	36 (61.0)	
Influential leaders, gatekeepers and anti- or pro-vaccination				
Some groups or leaders do not agree to MR vaccination for different reason. In general, do	Agree	16 (48.5)	17 (51.5)	<0.001
	Neutral	19 (25.0)	57(75.0)	
	Disagree	17 (10.0)	153 (90.0)	

you agree or disagree with these group?				
Do leaders (religious, political, teacher, health care workers) in your community support MR vaccines for infants and children?	No	20 (39.2)	31 (60.8)	<0.001
	Yes	32 (13.9)	198 (86.1)	
Would it trigger doubts to have your child vaccinated, if a celebrity advocates against MR vaccine?	Agree	11 (52.4)	10 (47.6)	<0.001
	Neutral	25 (39.1)	39 (60.9)	
	Disagree	17 (8.9)	175 (91.1)	
Has your imam/priest/rabbi ever advocated against MR vaccination?	No	30 (14.3)	180 (85.7)	<0.001
	Yes	24 (32.9)	49 (67.1)	
Did you follow your imam/priest/rabbi's advice to against MR vaccine?	No	10 (20.0)	40 (80.0)	0.001
	Yes	14 (60.9)	9 (39.1)	
Historical influences				
Do you remember any events in the past that would discourage you from getting MR vaccine for your children?	No	35 (15.3)	194 (84.7)	0.001
	Yes	18 (36.7)	31 (63.3)	
Has your community in the past refused to accept MR vaccine?	No	24 (19.7)	98 (80.3)	0.800*
	Yes	29 (18.5)	128 (81.5)	
Has your community ever felt the need to urgently introduce a new vaccine?	No	34 (16.3)	175 (83.7)	0.070
	Yes	28 (26.1)	51 (73.9)	
Religion/Culture/Gender/Socio Economic				
Do you know anyone who does not take a MR vaccine because of religious or cultural reasons?	No	19 (23.2)	63 (76.8)	0.280*
	Yes	35 (17.6)	164 (82.4)	
Does your religion/philosophy/cultural recommend against MR vaccine?	No	41 (16.7)	204 (83.3)	0.010
	Yes	12 (35.3)	22 (64.7)	
Have you ever refused a vaccine as you considered it to include porcine or other animal derived ingredients (non-halal)?	No	30 (14.0)	185 (86)	<0.001
	Yes	24 (36.9)	41 (63.1)	
Would you refuse MR vaccine for your child if the vaccinator was male/female or from a different ethnic	No	45 (17.2)	216 (82.8)	0.005
	Yes	7 (46.7)	8 (53.3)	

background/religion than yourself?				
Politics/Policies				
Do you trust, that your government is making decisions in your best interest with respect to what vaccine are provided?	Agree	30 (12.1)	218 (87.9)	<0.001
	Neutral	20 (76.9)	6 (23.1)	
	Disagree	2 (66.7)	1 (33.3)	
Did you ever disagree with the choice of MR vaccine or MR vaccination recommendation provided by your government?	Agree	17 (25.0)	51 (75.0)	0.007
	Neutral	21 (25.6)	61 (74.4)	
	Disagree	13 (10.5)	111 (89.5)	
I'm convinced that my government purchases the highest quality of MR vaccines.	Agree	21 (10.0)	190 (90.0)	<0.001
	Neutral	32 (47.8)	35 (52.2)	
	Disagree	0 (0.0)	1 (100.0)	
Did you ever have the impression your government/health care provider did not provide you with the best vaccine on the market?	No	33 (14.1)	201 (85.9)	<0.001
	Yes	19 (44.2)	24 (55.8)	
The only reason I have my child get MR vaccine is so they can enter daycare or school.	Agree	2 (9.1)	20 (90.9)	<0.001
	Neutral	20 (37.7)	33 (62.3)	
	Disagree	30 (14.9)	171 (85.1)	
Does your child's daycare/school require/advice to have your children to get MR vaccine?	No	31 (19.6)	127 (80.4)	0.761*
	Yes	22 (18.2)	99 (81.8)	
Geographic Barrier				
Has long waiting time at clinic prevented you from getting you child get MR immunization?	No	49 (18.8)	212 (81.2)	0.906*
	Yes	3 (20.0)	12 (80.0)	
If you have to spend more than 1 hour getting a vaccine, is it important enough to travel for it?	No	30 (40.5)	44 (59.5)	<0.001
	Yes	21 (10.3)	18(29.7)	

*not have association with vaccination status (p-value >0.2)

On this bivariate analysis, each of these questions were analysed using chi-square with p-value <0.02. After that, then we did multivariate analysis (binary regression) to see how big the correlation is.

From the Contextual Influences variable, there are 6 parts. The first part is the communication and media environment. On this first part, we have 5 questions, where

4 questions have association with the output (vaccination status). One of that question (Do you recall MR vaccine that was debated in the media?) is do not have association with the output (vaccination status). The second part is the influential leaders, gatekeepers and anti-or pro-vaccination lobbies that have 5 questions. All of those questions are have association with the vaccination status (output). The third part is the historical influences. There are only 3 questions in this part, and only one questions (Do you remember any events in the past that would discourage you from getting MR vaccine for your children?) that has correlation with the vaccination status (p-value < 0.02). This is also almost similar with the survey on vaccine confidence in 2016 that said that any experience regarding vaccination process can result either negative of positive decision regarding their willingness to do vaccination to their child. (Larson et al., 2015). The fourth part is religion/culture/gender/socio-economic. There are 4 questions in this part and only 1 question (Do you know anyone who does not take a MR vaccine because of religious or cultural reasons?) that do not have association with the output (vaccination status) where p-value >0.2. On the next part is the Politics/Policies (mandates). This part has 6 questions and only one that do not have association with the vaccination status. The last part is geographic barriers. There are 2 questions and one of them (Has long waiting time at clinic prevented you from getting you child get MR immunization?) did not have association with the vaccination status (output).

4.2.2. Individual and Group Influences and Vaccination Status

Table 7 Bivariate analysis of Individual and Group Influence and Vaccination Status

Individual and Group influence		**Vaccination Status**		**x^2 p-value**
		No (n %)	**Yes (n %)**	
Experience with past vaccine				
Do most children tolerate vaccination very well?	Agree	19 (11.3)	149 (88.7)	<0.001
	Neutral	27 (33.3)	54 (66.7)	
	Disagree	4 (15.4)	221 (84.6)	
Have you or someone you know ever had a bad reaction to MR vaccine which made you reconsider getting vaccination?	No	39 (15.6)	211 (84.4)	<0.001
	Yes	12 (48.0)	13 (52.0)	

Do you know of a child with a serious disease/disability because they were not get MR vaccination?	No	43 (22.8)	146 (77.2)	0.041
	Yes	11 (12.4)	78 (87.6)	
Do you know of anyone who has had a bad reaction to MR vaccine shot?	No	40 (16.7)	200 (83.3)	0.008
	Yes	13 (35.1)	24 (64.9)	
Have you heard of anyone who was disabled after receiving a MR vaccine?	No	32 (16.4)	163 (83.6)	0.076
	Yes	21 (25.6)	61 (74.4)	
Do experiences with pain with the past immunization prevent your child from getting MR immunization?	No	45 (17.1)	218 (82.9)	<0.001
	Yes	7 (58.3)	5 (41.7)	
Beliefs, attitudes about health and prevention				
Do you think is it possible to have received too many vaccie at one time?	No	40 (20.2)	131 (76.6)	0.015
	Yes	12 (11.5)	92 (88.5)	
Do you think MR vaccine overload the immune system?	No	50 (20.2)	197 (79.8)	0.082
	Yes	2 (6.9)	27 (93.1)	
Do you believe that there are other (better) ways to prevent diseases which can be prevented by a vaccine?	No	31 (14.9)	177 (85.1)	0.003
	Yes	21 (30.9)	47 (69.1)	
Do you believe that it is better for the child to start receive MR vaccine only when over one year of age?	No	37 (23.0)	124 (77.0)	0.024
	Yes	14 (12.3)	100 (87.7)	
Knowledge/awareness				
Do you feel that you know which vaccines you should get for your children?	No	27 (39.7)	41 (60.3)	<0.001
	Yes	25 (12.1)	182 (87.9)	
Do the mass immunization campaigns provide you with sufficient information to address your concern around MR vaccination?	No	33 (25.4)	97 (74.6))	0.009
	Yes	19 (13.0)	127 (87.0)	
Did you ever inform yourself on MR vaccine and then decide against it/delay receiving it?	No	26 (12.0)	190 (88.0)	<0.001
	Yes	27 (44.3)	34 (55.7)	
Do you feel get enough information about MR vaccine and its safety?	No	30 (34.1)	58 (65.9)	<0.001
	Yes	23 (12.2)	165 (87.8)	
Would you prefer to receive more information on MR	No	33 (28.9)	81 (71.1)	<0.001
	Yes	18 (11.2)	143 (88.8)	

vaccination at your health center?				
My health professional provides me with all the information I need to my question on MR vaccine immunization.	No	25 (33.3)	50 (66.7)	<0.001
	Yes	25 (12.6)	173 (87.4)	
Do you consider that MR vaccine is more important than other?	No	45 (19.3)	188 (80.7)	0.687*
	Yes	7 (16.7)	35 (83.3)	
Health system and providers-trust and personal experience				
Information on side effects following immunization is discussed openly by the authorities	No	31 (19.9)	125 (80.1)	0.560*
	Yes	20 (17.1)	97 (82.9)	
Have you ever felt healthcare professional, government, local authorities are pushing you into a MR vaccination decision you did not fully support?	Agree	10 (38.5)	16 (61.3)	0.002
	Neutral	20 (24.7)	61 (75.3)	
	Disagree	21 (12.8)	143 (87.2)	
Does having the same provider give all the infant vaccine make you more likely to accept MR vaccine than having a different provider each time vaccine are due?	Agree	20 (13.3)	130 (86.7)	<0.001
	Neutral	20 (37.0)	34 (63.0)	
	Disagree	10 (14.5)	59 (85.5)	
I am able to openly discuss my concerns about MR vaccine shots with my child's doctor.	Agree	26 (11.9)	193 (88.1)	<0.001
	Neutral	23 (48.9)	24 (51.1)	
	Disagree	1 (14.3)	6 (85.7)	
I trust the information I receive about MR vaccine shots.	Agree	30 (13.0)	200 (87.0)	<0.001
	Neutral	18 (45.0)	22 (55.0)	
	Disagree	3 (100.0)	0 (0.0)	
Do you feel that your healthcare provider cares about what is best for your child?	Agree	34 (15.5)	186 (84.5)	0.015
	Neutral	16 (32.7)	33 (67.3)	
	Disagree	0 (0.0)	2 (100.0)	
Risk/benefit (perceived, heuristic)				
How concern are you that MR vaccine shot of the childhood might not be safe?	Concern	27 (37.5)	45 (62.5)	<0.001
	Neutral	12 (46.2)	14 (53.8)	
	Not concern	12 (6.9)	162 (93.1)	
Do you think MR vaccine are still needed even when the disease is no longer prevalent?	Agree	33 (13.9)	205 (86.1)	<0.001
	Neutral	14 (48.3)	15 (51.7)	
	Disagree	4 (66.7)	2 (33.3)	
How concerned are you that your child might have a	Concern	32 (36.4)	56 (63.6)	<0.001
	Neutral	11 (39.3)	17 (60.7)	

serious side effect from MR vaccination shot?	Not concern	9 (5.7)	148 (94.3)	
How concerned are you that MR vaccine shot might not prevent the disease?	Concern	21 (31.3)	46 (68.7)	<0.001
	Neutral	17 (33.3)	34 (66.7)	
	Not concern	14 (9.1)	140 (90.9)	
Measles, rubella is not common where I live. That's why I decided against the MR vaccine..	Agree	13 (50.0)	13 (50.0)	<0.001
	Neutral	16 (39.0)	25 (61.0)	
	Disagree	23 (11.2)	182 (88.8)	
Do you believe that MR vaccines are still needed when diseases are rare?	Agree	29 (12.4)	205 (87.6)	<0.001
	Neutral	19 (55.9)	15 (44.1)	
	Disagree	4 (66.7)	2 (33.3)	

*not have association with vaccination status (p-value >0.2)

On this bivariate analysis, each of these questions were analysed using chi-square with p-value <0.02. After that, then we did multivariate analysis (binary regression) to see how big the correlation is.

From the Individual and Group Influences variable, there are 5 parts. The first part is the experience with past vaccine. On this first part we have 6 questions and all of them has association with the outcome (vaccination status) where p-value < 0.2. Second part is beliefs, attitude about health and prevention. This part has 4 questions. All of them has association with the vaccination status. Next part is the knowledge/awareness. This past has 7 questions, and only 1 question (Do you consider that MR vaccine is more important than other?) that do not have association with the output (vaccination status). The next part is health systems and providers-trust and personal experience. This part has 6 questions and only 1 question (Have you ever felt healthcare professional, government, local authorities are pushing you into a MR vaccination decision you did not fully support?) that has no association with the vaccination status. The last part of this variable is risk/benefit (perceived/heuristic). There are 6 questions and all of them has association with the vaccination status.

4.2.3. Vaccine/vaccination (Spesific Issues) and Vaccination Status

Table 8 Bivariate analysis of vaccine/vaccination and vaccination status

Vaccine/vaccination		Vaccination Status		x^2 p-value
		No (n %)	Yes (n %)	
Risk/benefit (scientific evidence)				
Do you believe MR vaccines are safe for your children?	Agree	23 (10.0)	206 (90.0)	<0.001
	Neutral	26 (63.4)	15 (36.6)	
	Disagree	3 (75.0)	1 (25.0)	
Me or my child ever experienced severe adverse reactions following MR vaccine immunization.	Agree	5 (50.0)	5 (50.0)	<0.001
	Neutral	25 (36.8)	43 (63.2)	
	Disagree	18 (9.4)	173 (90.6)	
Before administering MR vaccine, my healthcare workers (HCW) always provided me with enough information on the side effects that might follow.	Agree	22 (12.0)	162 (88.0)	<0.001
	Neutral	24 (35.8)	43 (64.2)	
	Disagree	4 (20.0)	16 (80.0)	
Mode of administration				
Do you fear pain to your child when receiving MR vaccine shot make you hesitate to do MR immunization.	Agree	14 (60.9)	9 (39.1)	<0.001
	Neutral	13 (40.6)	19 (59.4)	
	Disagree	23 (10.6)	193 (89.4)	
Has pain following MR vaccine immunization ever made you reconsider to have your child vaccinated?	Agree	12 (41.4)	17 (58.6)	<0.001
	Neutral	12 (30.8)	27 (69.2)	
	Disagree	26 (12.8)	177 (87.2)	
Would you be willing to accept more vaccines for your child if there was no pain involved?	Agree	26 (14.9)	149 (85.1)	0.011
	Neutral	16 (34.0)	31 (66.0)	
	Disagree	8 (17.0)	39 (83.0)	
Do you trust your healthcare worker to safely administer the MR vaccine to your child?	Agree	29 (12.1)	210 (87.9)	<0.001
	Neutral	21 (70.0)	9 (30.0)	
	Disagree	1 (25.0)	3 (75.0)	
Design on vaccination program/mode of delivery				
Is the MR vaccination process welcoming?	No	22 (57.9)	16 (42.1)	<0.001
	Yes	27 (11.6)	206 (88.4)	
Do you want medical consultation on MR vaccination?	No	13 (61.9)	8 (38.1)	<0.001
	Yes	38 (15.2)	212 (84.8)	
What would you prefer for your child:	Health center / doctor	38 (17.0)	185 (83.0)	0.124

	Door to door vaccination	3 (42.9)	4 (57.1)	
	Mass vaccination	1 (6.7)	14 (93.3)	
	School based program	7 (26.9)	19 (73.1)	
Would you let your child get vaccinated within a school based immunization program?	No	30 (38.5)	48 (61.5)	<0.001
	Yes	21 (10.9)	172 (89.1)	
Did you ever refrain from having your child MR vaccinated during a mass immunization campaign?	No	18 (10.6)	152 (89.4)	<0.001
	Yes	33 (32.7)	68 (67.3)	
Vaccination schedule				
Is it difficult to get MR vaccines because of the schedule?	No	32 (15.5)	175 (84.5)	0.028
	Yes	17 (27.9)	44 (72.1)	
How sure are you that following the recommended MR vaccine shot schedule is a good idea for your child?	Agree	26 (11.4)	203 (88.6)	<0.001
	Neutral	21 (58.3)	15 (41.7)	
	Disagree	3 (75.0)	1 (25.0)	
Children get more shots than are good for them.	Agree	21 (10.6)	178 (89.4)	<0.001
	Neutral	26 (41.9)	36 (58.1)	
	Disagree	3 (50.0)	3 (50.0)	
It is better for children to get fewer vaccines at the same time	Agree	7 (9.0)	71 (91.0)	0.011
	Neutral	36 (25.0)	108 (75.0)	
	Disagree	7 (14.9)	40 (85.1)	
Role of healthcare professionals				
Did healthcare professionals ever treat you without respect (e.g. in regard to your appearance, education or cultural background) that you will hesitate to return to the healthcare facility?	No	46 (18.5)	202 (81.5)	0.966*
	Yes	4 (18.2)	18 (81.8)	
Did you choose your doctor/healthcare providers based on their willingness to alter or delay the MR vaccination schedule according to your requests?	No	40 (19.2)	168 (80.8)	0.367*
	Yes	8 (14.0)	49 (86.0)	
	No	46 (17.6)	215 (82.4)	0.020

Has your healthcare provider ever advised you that MR vaccine was not necessary or had too many side effects?	Yes	4 (50.0)	4 (50.0)	
Was your doctor ever reluctant to administer MR vaccine you wanted for your child?	No	45 (17.4)	213 (82.6)	0.070
	Yes	4 (40.0)	6 (60.0)	

*not have association with vaccination status (p-value >0.2)

On this bivariate analysis, each of these questions were analysed using chi-square with p-value <0.02. After that, then we did multivariate analysis (binary regression) to see how big the correlation is.

From the Vaccine/vaccination variable, there are 5 parts. The first part is the risk/benefit (scientific evidence). This part has 3 questions and all of them has association with the output (vaccination status). The second part is mode of administration that has 4 questions. On this part, all the questions have association with vaccination status. The third part is design of vaccination program/mode of delivery. There are 5 questions and all of them have association with the vaccination status (outcome). The fourth part is the vaccination schedule. On this part, there are four questions and all of those questions have association with the vaccination status. The last part of this variable is role of healthcare professionals. On this part there are 4 questions. Two of them (Did healthcare professionals ever treat you without respect (e.g. in regard to your appearance, education or cultural background) that you will hesitate to return to the healthcare facility? and Did you choose your doctor/healthcare providers based on their willingness to alter or delay the MR vaccination schedule according to your requests?) has no association with the output.

4.3. Bivariate analysis (Regression Analysis)

4.3.1. Contextual Influences

Table 9 Regression Analysis of Contextual Influences

Contextual Influences	**Vaccination Status**		**OR (95% CI)**
	No (n %)	**Yes (n %)**	
Communication and media environment			

Who do you trust the most for information regarding MR vaccine?	Non-health workers	11 (45.8)	13 (54.2)	1
	Health workers	43 (16.6)	216 (83.4)	4.250 (1.786-10.116)
Have reports you heard/read on your social media/media made you reconsider the choice to give your children MR Vaccine?	No	5 (8.5)	54 (91.5)	1
	Yes	49 (21.9)	175 (78.1)	0.331 (0.125-0.872)
Do you share information related to MR vaccination within your social media?	No	37 (27.6)	97 (72.4)	1
	Yes	12 (13.3)	78 (86.7)	2.479 (1.212-5.074)
Do you believe in reports in the media by parents claiming to have lost a child to a MR vaccine?	No	26 (15.8)	139 (84.2)	1
	Yes	23 (39.0)	36 (61.0)	0.293 (0.150-0.572)
Influential leaders, gatekeepers and anti- or pro-vaccination				
Some groups or leaders do not agree to MR vaccination for different reason. In general, do you agree or disagree with these group?	Agree	16 (48.5)	17 (51.5)	0.354 (0.150-0.835)
	Neutral	19 (25.0)	57(75.0)	1
	Disagree	17 (10.0)	153 (90.0)	3 (1.458-6.173)
Do leaders (religious, political, teacher, health care workers) in your community support MR vaccines for infants and children?	No	20 (39.2)	31 (60.8)	1
	Yes	32 (13.9)	198 (86.1)	3.992 (2.033-7.839)
Would it trigger doubts to have your child vaccinated, if a celebrity advocates against MR vaccine?	Agree	11 (52.4)	10 (47.6)	0.583 (0.216-1.573)**
	Neutral	25 (39.1)	39 (60.9)	1
	Disagree	17 (8.9)	175 (91.1)	6.599 (3.253-13.384)
Has your imam / priest / rabbi ever advocated against MR vaccination?	No	30 (14.3)	180 (85.7)	1
	Yes	24 (32.9)	49 (67.1)	0.340 (0.183-0.634)
	No	10 (20.0)	40 (80.0)	1

Did you follow your imam/priest/rabbi's advice to against MR vaccine?	Yes	14 (60.9)	9 (39.1)	0.161 (0.054-0.477)
Historical influences				
Do you remember any events in the past that would discourage you from getting MR vaccine for your children?	No	35 (15.3)	194 (84.7)	1
	Yes	18 (36.7)	31 (63.3)	0.311 (0.157-0.615)
Has your community ever felt the need to urgently introduce a new vaccine?	No	34 (16.3)	175 (83.7)	1
	Yes	28 (26.1)	51 (73.9)	0.550 (0.287-1.055)**
Religion/Culture/Gender/Socio Economic				
Does your religion / philosophy / cultural recommend against MR vaccine?	No	41 (16.7)	204 (83.3)	1
	Yes	12 (35.3)	22 (64.7)	0.368 (0.169-0.803)
Have you ever refused a vaccine as you considered it to include porcine or other animal derived ingredients (non-halal)?	No	30 (14.0)	185 (86)	1
	Yes	24 (36.9)	41 (63.1)	0.277 (0.147-0.522)
Would you refuse MR vaccine for your child if the vaccinator was male/female or from a different ethnic background/religion than yourself?	No	45 (17.2)	216 (82.8)	1
	Yes	7 (46.7)	8 (53.3)	0.238 (0.082-0.690)
Politics/Policies				
Do you trust, that your government is making decisions in your best interest with respect to what vaccine are provided?	Agree	30 (12.1)	218 (87.9)	24.222 (9.010-65.118)
	Neutral	20 (76.9)	6 (23.1)	1
	Disagree	2 (66.7)	1 (33.3)	1.677 (0.128-21.732)**
Did you ever disagree with the choice of MR vaccine or MR vaccination recommendation	Agree	17 (25.0)	51 (75.0)	1.033 (0.493-2.164)**
	Neutral	21 (25.6)	61 (74.4)	1
	Disagree	13 (10.5)	111 (89.5)	2.939 (1.376-6.279)

provided by your government?				
Did you ever have the impression your government/health care provider did not provide you with the best vaccine on the market?	No	33 (14.1)	201 (85.9)	1
	Yes	19 (44.2)	24 (55.8)	0.207 (0.102-0.420)
The only reason I have my child get MR vaccine is so they can enter day care or school.	Agree	2 (9.1)	20 (90.9)	6.061 (1.279-28.728)
	Neutral	20 (37.7)	33 (62.3)	1
	Disagree	30 (14.9)	171 (85.1)	3.455 (1.755-6.802)
Geographic Barrier				
If you have to spend more than 1 hour getting a vaccine, is it important enough to travel for it?	No	30 (40.5)	44 (59.5)	1
	Yes	21 (10.3)	182 (89.7)	5.909 (3.092-11.292)

**not statistically significant with the output (vaccination status)

People who more trust the health workers are 4.250 times higher to get their children MR Vaccination compare to parents who do not trust the health worker. This is quite similar with the on the study in four cities in United States in 2005. Those cities were Colorado, Massachusetts, Missouri and Washington on factors associated with refusal childhood vaccination. They found out that health workers are group of people whose parents trust the most regarding vaccination (Salmon et al., 2005). People who have had read/heard report on the media/social media regarding MR vaccination are 66.9 % less likely to give their children MR vaccine compare to the ones who hadn't read/heard report and statistically significant. This result is quite similar with research on Semantic Network Analysis of Vaccine Sentiment in Online Social Media in United States. The result come in both ways: positive and negative, and it work in either way. The positive sentiment focusing on how parents communicating health risk and benefits, with speaking about concepts. For instance peaking about measles, autism, HPV Vaccine, link between vaccine and autism, and MMR vaccine itself. On the other hand, the negative sentiment focusing on the children, with highlighting on the organizational bureau, such as: CDC, vaccine industry, media mainstream, companies that made

medicine and the country itself (United States). The prevalence of negative sentiment showed through messaging, scepticism and not trusting on government that talking about scientific evidence about the true benefit of vaccine. (Kang et al., 2017). People who share information related to the MR Vaccination are 2.479 times higher to have their children to get MR vaccination compare to the parents who not share the MR vaccination in their social media network. This is quite similar with the study about the use of technology to promote vaccination in 2018. They said that social media can have positive influence and good platform to have open conversation on the level of interpersonal. This also can leverage the public health program and push the community member to participate to get more information on vaccine (Kolff, Scott, & Stockwell, 2018). People who believe reports in the media by parents who claimed lost their child because of MR vaccine are 70.7 % less likely to have their children to get MR vaccine compare to parents who do not believe in those report.

People who agree with the group leaders that not agree to MR vaccination 64.6 % less likely to get MR vaccination compare to people who neutral. Meanwhile, people who disagree 3 times higher to get MR vaccination compare to people who neutral. People who get support from the leader on MR Vaccination are 3.993 times higher to give their children MR Vaccination compare to the ones that not get support from their leader. This quite similar with the research regarding Health Communication and Vaccine Hesitancy in 2015. It said that in the midst of vaccine hesitancy, particularly for making a strong trust, role of the local leader and communication in the community already been proven to increase the vaccine acceptance and thus reducing the hesitancy (Goldstein, MacDonald, & Guirguis, 2015). People who agree that it would trigger doubts regarding MR Vaccine if celebrity advocates against it are 41.7% less likely to have their child to get MR vaccination compare to the parents who being neutral about it and it is statistically not significant, while parents who disagree are 6.599 times higher to get their children to have MR vaccination. This is quite similar with the study in 2018 in United States on Anti-vaccine Movement. They discuss the role of celebrity named Jenny McCarthy that proven to be so influential in voicing her anti-vaccine, especially MMR vaccine. Her opinion regarding this is that MMR vaccine can cause autism (Hussain, Ali, Ahmed, & Hussain, 2018). People who answer that their religion leader ever advocated against MR vaccine are 66% less likely to have their child to get MR

vaccine compare to parents who said that their leader never advocated against MR vaccine. Next question is that people who followed their religion leaders are 83% less likely to give their child MR Vaccine compare with parents who do not follow their religion leader. This quite similar with the research in 2013 on how religious leader promoting acceptance vaccination. They did semi-structured interview with orthodox Protestant religious leaders. The conclusion is that the religious attitude towards vaccination is vary from full acceptance to clear refusal. Furthermore, their objections towards vaccination are mainly came from the religious doctrine and the application of this is that they use it to spread the message on anti-vaccine (Ruijs, Hautvast, Kerrar, Van der Velden, & Hulscher, 2013).

Parents/care takers who remember any events in the past regarding MR Vaccination are 68.9% less likely to give their children MR Vaccination compare to the parents/care taker who did not remember the events in the past. Parents who said their community ever feel the need to urgently introduce a new vaccine are 45% less likely to have their child to get MR vaccine compare with parent who said their community feel no need to be introduced to a new vaccine and it is not statistically significant. This is quite similar with the research Measuring Trust in Vaccination: A Systematic Review in 2018. It is said that historical influences that has strong connection with the trust. This has connection with confidence in vaccine hesitancy. If level of confidence is decreasing over time, the population will lose the trust on system, which in the end will make them not believe in information about health and health intervention in the future (for instance vaccination program) (Larson et al., 2018).

Parents who said that their religion/philosophy/culture recommended against MR vaccine are 63.2% less likely to have their children to get MR vaccination compare to parents who do not know. Parents who refused to give their children MR Vaccine because they consider it's not halal are only 72.3% less likely to give MR Vaccine to their child compare to parents who accept the MR Vaccine. It is quite similar with the research in Malaysia. They found out that among the reasons why the parents/care giver not complete or not even doing the immunization is that private healthcare facilities reason; not enough vaccine, or personal reason, like they don't have time to do so, forget, refused vaccine and they doubt the status halal of the vaccine. (Ahmad et al., 2017). Parents who said that they would refuse MR vaccine if the vaccinator are

different ethnic background/religion are 76.2% less likely to have their child to get MR vaccination compare to parent who not refuse vaccinator from different background/religion. Parent who agree and trust their government making decision in their best interest are 24.222 times higher to give their child MR vaccine compare to the neutral, while parents who disagree are 1.677 times higher to give their child MR immunisation compare the parents who neutral about this and it is statistically not significant. Parents who disagree with MR vaccination recommendation from government are 2.939 times higher to give their child MR immunization compare to parents who are neutral about this, while parents who agree with this are 1.033 times higher to give their child MR vaccination compare to the neutral parents and it is statistically not significant. Parents who feel government did not provide the best vaccine in the market are 79.3% less likely to give their child MR vaccine compare to the parent who did not feel the same thing. This is quite similar with study on vaccine rejection and hesitancy in 2017. It is said that another reason for vaccine hesitancy is that they think vaccines are not effective. It is part of medical/pharmaceutical/government conspiracy. This is the effect on misinformation then begin to rise the number of hesitant parents/caregiver (Smith, 2017). Parents who agree with the only reason they give MR vaccine to their child so they can enter the school are 6.061 times higher to give their child MR vaccine compare to the parents who neutral about this, while parents who disagree are 3.455 times higher to give their child MR vaccination compare to the neutral parents. This is quite similar with the study in United States on vaccine policy, where all 50 states require children to have certain vaccination before attending public school, and some even day care or private school also apply the same policy. However, this laws still permit exemptions from school vaccination requirement from medical, religious or philosophical reasons (Barraza, Schmit, & Hoss, 2017). Parents who would spend one hour to get MR vaccine are 5.909 times higher compare to parent who would not do that.

4.3.2. Individual and Group Influence

Table 10 Regression Analysis of individual and group influence

Individual and Group influence	**Vaccination Status**		OR (95 % CI)
	No	**Yes**	

		(n %)	(n %)	
Experience with past vaccine				
Do most children tolerate vaccination very well?	Agree	19 (11.3)	149 (88.7)	3.921 (2.018-7.620)
	Neutral	27 (33.3)	54 (66.7)	1
	Disagree	4 (15.4)	221 (84.6)	2.750 (0.861-8.783)**
Have you or someone you know ever had a bad reaction to MR vaccine which made you reconsider getting vaccination?	No	39 (15.6)	211 (84.4)	1
	Yes	12 (48.0)	13 (52.0)	0.20 (0.085-0.471)
Do you know of a child with a serious disease/disability because they were not get MR vaccination?	No	43 (22.8)	146 (77.2)	1
	Yes	11 (12.4)	78 (87.6)	2.088 (1.020-4.278)
Do you know of anyone who has had a bad reaction to MR vaccine shot?	No	40 (16.7)	200 (83.3)	1
	Yes	13 (35.1)	24 (64.9)	0.369 (0.173-0.786)
Have you heard of anyone who was disabled after receiving a MR vaccine?	No	32 (16.4)	163 (83.6)	1
	Yes	21 (25.6)	61 (74.4)	0.570 (0.306-1.064)**
Do experiences with pain with the past immunization prevent your child from getting MR immunization?	No	45 (17.1)	218 (82.9)	1
	Yes	7 (58.3)	5 (41.7)	0.147 (0.045-.485)
Beliefs, attitudes about health and prevention				
Do you think is it possible to have received too many vaccie at one time?	No	40 (20.2)	131 (76.6)	1
	Yes	12 (11.5)	92 (88.5)	2.341 (1.165-4.705)
Do you think MR vaccine overload the immune system?	No	50 (20.2)	197 (79.8)	1
	Yes	2 (6.9)	27 (93.1)	3.426 (0.788-14.894)**
	No	31 (14.9)	177 (85.1)	1

Do you believe that there are other (better) ways to prevent diseases which can be prevented by a vaccine?	Yes	21 (30.9)	47 (69.1)	0.392 (0.207-0.744)
Do you believe that it is better for the child to start receive MR vaccine only when over one year of age?	No	37 (23.0)	124 (77.0)	1
	Yes	14 (12.3)	100 (87.7)	2.131 (1.092-4.161)
Knowledge/awareness				
Do you feel that you know which vaccines you should get for your children?	No	27 (39.7)	41 (60.3)	1
	Yes	25 (12.1)	182 (87.9)	4.794 (2.526-9.100)
Do the mass immunization campaigns provide you with sufficient information to address your concern around MR vaccination?	No	33 (25.4)	97 (74.6))	1
	Yes	19 (13.0)	127 (87.0)	2.274 (1.219-4.241)
Did you ever inform yourself on MR vaccine and then decide against it/delay receiving it?	No	26 (12.0)	190 (88.0)	1
	Yes	27 (44.3)	34 (55.7)	0.172 (0.090-0.330)
Do you feel get enough information about MR vaccine and its safety?	No	30 (34.1)	58 (65.9)	1
	Yes	23 (12.2)	165 (87.8)	3.711 (1.996-6.899)
Would you prefer to receive more information on MR vaccination at your health center?	No	33 (28.9)	81 (71.1)	1
	Yes	18 (11.2)	143 (88.8)	3.237 (1.714-6.112)
My health professional provides me with all the information I	No	25 (33.3)	50 (66.7)	1
	Yes	25 (12.6)	173 (87.4)	3.460 (1.829-6.545)

need to my question on MR vaccine immunization.				
Health system and providers-trust and personal experience				
Have you ever felt healthcare professional, government, local authorities are pushing you into a MR vaccination decision you did not fully support?	Agree	10 (38.5)	16 (61.3)	0.525 (0.205-1.340)**
	Neutral	20 (24.7)	61 (75.3)	1
	Disagree	21 (12.8)	143 (87.2)	2.233 (1.129-4.415)
Does having the same provider give all the infant vaccine make you more likely to accept MR vaccine than having a different provider each time vaccine are due?	Agree	20 (13.3)	130 (86.7)	3.824 (1.850-7.900)
	Neutral	20 (37.0)	34 (63.0)	1
	Disagree	10 (14.5)	59 (85.5)	3.471 (1.456-8.272)
I am able to openly discuss my concerns about MR vaccine shots with my child's doctor.	Agree	26 (11.9)	193 (88.1)	7.114 (3.521-14.374)
	Neutral	23 (48.9)	24 (51.1)	1
	Disagree	1 (14.3)	6 (85.7)	5.750 (0.642-51.526)**
Risk/benefit (perceived, heuristic)				
How concern are you that MR vaccine shot of the childhood might not be safe?	Concern	27 (37.5)	45 (62.5)	1.429 (0.577-3.537)**
	Neutral	12 (46.2)	14 (53.8)	1
	Not concern	12 (6.9)	162 (93.1)	11.571 (4.329-30.485)
Do you think MR vaccine are still needed even when the disease is no longer prevalent?	Agree	33 (13.9)	205 (86.1)	5.798 (2.564-13.110)
	Neutral	14 (48.3)	15 (51.7)	1
	Disagree	4 (66.7)	2 (33.3)	0.467 (0.074-2.959)**
How concerned are you that your child might have a serious side effect from MR vaccination shot?	Concern	32 (36.4)	56 (63.6)	1.132 (0.473-2.714)**
	Neutral	11 (39.3)	17 (60.7)	1
	Not concern	9 (5.7)	148 (94.3)	10.641 (3.860-29.329)
	Concern	21 (31.3)	46 (68.7)	1.095

How concerned are you that MR vaccine shot might not prevent the disease?				(0.503-2.385)**
	Neutral	17 (33.3)	34 (66.7)	1
	Not concern	14 (9.1)	140 (90.9)	5 (2.246-11.133)
Measles, rubella is not common where I live. That's why I decided against the MR vaccine.	Agree	13 (50.0)	13 (50.0)	0.640 (0.237-1.726)**
	Neutral	16 (39.0)	25 (61.0)	1
	Disagree	23 (11.2)	182 (88.8)	5.064 (2.362-10.859)
Do you believe that MR vaccines are still needed when diseases are rare?	Agree	29 (12.4)	205 (87.6)	8.954 (4.102-19.547)
	Neutral	19 (55.9)	15 (44.1)	1
	Disagree	4 (66.7)	2 (33.3)	0.633 (0.102-3.938)**

**not statistically significant with the output (vaccination status)

Parents who agree with most children can tolerate vaccination very well are 3.921 times higher will get their children to get MR vaccine compare to neutral parents, while parents who disagree with this are 2.750 times higher to get their children to get MR vaccine compare to the neutral parents and it is statistically not significant. Parents who know a child that had bad reaction because MR vaccine and it made them consider to vaccinate their children are 80% less likely to have their children to get MR vaccination compare to parents who do not know. Parents who know a child with serious disease/disability because he/she do not get MR vaccination are 2.088 times higher to get their child MR vaccination compare to those parents who do not know. Parents who know a child who had bad reaction after MR vaccination are 63.1% less likely to give their child MR vaccination compare to the parents who do not know. Parents who heard someone disabled after getting MR vaccination are 43% less likely to give their child MR vaccination compare to those parents who have not heard about it and it is statistically not significant. Parents who have had pain experience in the past that prevent them to give their child MR vaccination are 2.131 times higher to give their child immunisation compare to those parents who have not have pain experiences. On this part, it is all connected to the pain related during vaccination. This is quite similar with the research in Provo, Utah, United States on Minimizing Pain During Childhood Vaccination Injections: Improving Adherence to Vaccination Schedules in 2016. They conclude that pain that being experienced at early life can have bad psychological effect

and the cause of that kind of experience is due to vaccination and the result is that people become not attached to the program (Eden, Macintosh, Luthy, & Beckstrand, 2014). This quite similar with the study on past experiences and current perspective on intradermal vaccination. This study is in Italy and they explain about the variety vaccine that get administered to our body from simple to sophisticated. Lately, the development of those innovative tools makes vaccine administration is less invasive, more simple, rapid and more safe. By the help of technology like this, we hope in the future it can help to increase the number coverage of vaccine, because one of the reason of vaccine hesitant or even refusal is due to the pain (Sticchi, Alberti, Alicino, & Crovari, 2010). Another study regarding the hesitancy due to allergy after vaccination is held in United States in 2001. On their result, they found out that there was an increasing number of older African-American that afraid getting flu vaccination because they were concern about allergy and vaccine effectiveness and they also do not trust on the vaccine and healthcare system (Wray et al., 2007).

Parents that think it is possible to have received too many vaccine at. One time are 2.341 times higher to get their child MR vaccination compare to those parent who think the opposite. Parents who thinks MR vaccine overload immune system are 4.326 times higher to get their child to get MR vaccination compare to parents who think it is not overload the immune system and it is statistically not significant. Parents who believe that there are other (better) ways to prevent diseases by vaccine are 60.8% less likely to give their children vaccination compare to parents who do not believe so and statistically significant. This is quite similar with research regarding the rise of complementary and alternative medicine. The reason people using CAM in immunization is that they believe the conventional vaccine is more harm than good. Also, patient believe what CAM (non-medically trained) practitioner said regarding vaccination and then they become and against vaccination (Ernst, 2001). Parents who believe it is better to give their child MR vaccine when over 1 year is 2.131 times higher to give their child MR vaccine compare to those parents who do not believe that.

Parents who know which vaccines are needed for their children are 4.794 times higher to give their children vaccine compare to those who are not know. This is quite similar with the research in Iraq on 2014 about parents' knowledge and practice regarding on their child's immunization They found that strong relationship between

pediatric immunization coverage and parental knowledge and vaccination practice. Both of this relationship has positive correlation. Which in the end can increase vaccination rates in children (Al-Lela et al., 2014). Parents that get sufficient information regarding their concern on MR vaccination due to mass immunization program are 2.274 times higher to give their child MR vaccine compare to those parents who do not get enough information about their concern. Parents who inform themselves regarding MR vaccination and then decide to delay/refuse it are 82.8% less likely to give their child MR vaccination compare to those parent who do not inform themselves. This is quite similar with the study in 2013 about beliefs and behaviour on HPV vaccine. They conlude that has associated with the vaccine refusal is that lack of information and knowledge about HPV vaccination and it can lead decreasing number of vaccine uptake (Zimet, Rosberger, Fisher, Perez, & Stupiansky, 2013). People who feel they got enough information regarding MR vaccine and its safety are 3.711 times higher to give their child MR immunization compare to those parents who feel the opposite. Parents who prefer to receive more information on MR vaccine in their health center are 3.237 times higher to give their child MR vaccination compare to the parents who choose do not want more information. Parents who said that their health professionals provide them with all information on MR vaccinations are 3.460 times higher to give their child MR vaccine compare to said that their health professional do not give them information that they need. Parents who consider MR vaccine is more important than other vaccine are 3.460 times higher to give their child MR vaccine compare with parents who do not think like that.

Parents who agree they're being pushed by health professional, government, local authorties into MR vaccine decision that they do not fully support are 47.5% less likely to get their child MR vaccination and it is statistically not significant compare to those parent who neutral while parents are do not agree that they're being pushed by health professional, government, local authorities into MR vaccine decision that they do not fully support are 2.233 times higher to bring their child to get MR vaccination compare to the neutral. Parent who agree to have the same health provider make them more accept MR vaccine are 3.824 times higher to get their child to get MR vaccine compare parents who neutral, while parents who disagree are 3.471 times higher to get their child MR vaccination compare parents who neutral about this Parents who agree

that they're able to discuss regarding their concern about MR vaccination with the child's doctor are 7.114 times higher to get their child to have MR vaccination compare to the parents who neutral. While parents who do not agree are 5.750 times higher to give their child MR vaccination compare to those parents who are neutral about this and it is statistically not significant. On this part that has 3 questions regarding health systems, providers trust and personal experience on MR vaccine. It quite similar with study on vaccine refusal an trust. It is said that an important key to approach is to build strong relationship between health care professionals and parent. This strong relationship then can be used in facing multidimensional problems that surrounding vaccine hesitancy. (Bester, 2015)

Parents who concern that MR Vaccine might not be safe are 1.429 times higher to give their child MR Vaccine compare to those parents who being neutral and it is statistically not significant, while parents who not concern at all regarding MR vaccine might not be safe are 11.571 times higher to give their child MR vaccine compare to parents who being neutral regarding this issue. This is quite similar with the research about Parental perceptions surrounding risks and benefits of immunization in 2003 in United States. The result is that although most parents believe the safety of the vaccine for their child, not all parents share the same idea about the level of safety, and the involvement of health care worker is very important on the communication side. Using good communication skill to talk to the hesitant parent (Gust et al., 2003). Parents who agree that MR vaccines are still needed even when the disease is no longer prevalent are 5.798 times higher to give their child MR immunisation compare to those parents who neutral about this, while parents who disagree that MR still needed even the diseases no longer prevalent are 53.5% less likely to give their child MR vaccine compare to the parent who neutral about this and it is statistically not significant. Parents who concern that they're child might get serious side effect following MR shot are 1.132 times higher to get their child to get MR vaccination compare to those parent who neutral on this and it is statistically not significant, while parents who not concern about side effect after MR vaccination shot are 10.641 times higher to get their child MR vaccine compare parents to neutral about this. Parents who concern that MR vaccine shot might nor prevent the disease are 1.095 times higher to get their child MR vaccination compare to parent who neutral about this and it is statistically not

significant, while parents who do not concern are 5 times higher to give their child MR vaccination compare to the parents who neutral. Parents who agree to against MR vaccine because measles and rubella is not common where they live are 36% less likely to give their child MR vaccine compare to parents who neutral about this and it is statistically not significant, while parents who not agree to against MR vaccination because it not common where they live are 5.064 times higher to give their child MR vaccination compare to those parents who neutral about this. Parents who believe MR vaccine still needed even it is rare are 8.954 times higher to get their child MR vaccination compare to parents who neutral about this, while parent who disagree that MR still needed when the diseases rare are 36.7% less likely to give their child MR vaccination compare to parent who neutral about this and it is statistically not significant.

4.3.3. Vaccine/Vaccination (Specific Issue)

Table 11 Regression Analysis of Vaccine/vaccination

Vaccine/vaccination		Vaccination Status		OR (95 % CI)
		No (n %)	Yes (n %)	
Risk/benefit (scientific evidence)				
Do you believe MR vaccines are safe for your children?	Agree	23 (10.0)	206 (90.0)	15.525 (7.204-33.456)
	Neutral	26 (63.4)	15 (36.6)	1
	Disagree	3 (75.0)	1 (25.0)	0.578 (0.055-6.063)**
Me or my child ever experienced severe adverse reactions following MR vaccine immunization.	Agree	5 (50.0)	5 (50.0)	0.581 (0.153-2.207)
	Neutral	25 (36.8)	43 (63.2)	1
	Disagree	18 (9.4)	173 (90.6)	5.588 (2.798-11.161)
Before administering MR vaccine, my healthcare workers (HCW) always provided me with enough information on the	Agree	22 (12.0)	162 (88.0)	4.110 (2.105-8.025)
	Neutral	24 (35.8)	43 (64.2)	1
	Disagree	4 (20.0)	16 (80.0)	2.233 (0.670-7.443)**

side effects that might follow.				
Mode of administration				
Do you fear pain to your child when receiving MR vaccine shot make you hesitate to do MR immunization.	Agree	14 (60.9)	9 (39.1)	0.440 (0.147-1.315)
	Neutral	13 (40.6)	19 (59.4)	1
	Disagree	23 (10.6)	193 (89.4)	5.741 (2.510-13.133)
Has pain following MR vaccine immunization ever made you reconsider to have your child vaccinated?	Agree	12 (41.4)	17 (58.6)	0.630 (0.231-1.719)**
	Neutral	12 (30.8)	27 (69.2)	1
	Disagree	26 (12.8)	177 (87.2)	3.026 (1.366-6.699)
Would you be willing to accept more vaccines for your child if there was no pain involved?	Agree	26 (14.9)	149 (85.1)	2.958 (1.421-6.157)
	Neutral	16 (34.0)	31 (66.0)	1
	Disagree	8 (17.0)	39 (83.0)	2.516 (0.953-6.644)**
Do you trust your healthcare worker to safely administer the MR vaccine to your child?	Agree	29 (12.1)	210 (87.9)	16.897 (7.064-40.414)
	Neutral	21 (70.0)	9 (30.0)	1
	Disagree	1 (25.0)	3 (75.0)	7 (0.639-76.708)**
Design on vaccination program/mode of delivery				
Is the MR vaccination process welcoming?	No	22 (57.9)	16 (42.1)	1
	Yes	27 (11.6)	206 (88.4)	10.491 (4.913-22.403)
Do you want medical consultation on MR vaccination?	No	13 (61.9)	8 (38.1)	1
	Yes	38 (15.2)	212 (84.8)	9.066 (3.520-23.348)
What would you prefer for your child:	Health center / doctor	38 (17.0)	185 (83.0)	1.794 (0.705-4.565)**
	Door to door vaccination	3 (42.9)	4 (57.1)	0.491 (0.087-2.770)**
	Mass vaccination	1 (6.7)	14 (93.3)	5.158 (0.568-46.834)**

	School based program	7 (26.9)	19 (73.1)	1
Would you let your child get vaccinated within a school based immunization program?	No	30 (38.5)	48 (61.5)	1
	Yes	21 (10.9)	172 (89.1)	5.119 (2.691-9.737)
Did you ever refrain from having your child MR vaccinated during a mass immunization campaign?	No	18 (10.6)	152 (89.4)	1
	Yes	33 (32.7)	68 (67.3)	0.244 (0.128-0.463)
Vaccination schedule				
Is it difficult to get MR vaccines because of the schedule?	No	32 (15.5)	175 (84.5)	1
	Yes	17 (27.9)	44 (72.1)	0.473 (0.241-0.929)
How sure are you that following the recommended MR vaccine shot schedule is a good idea for your child?	Agree	26 (11.4)	203 (88.6)	10.931 (5.019-23.804)
	Neutral	21 (58.3)	15 (41.7)	1
	Disagree	3 (75.0)	1 (25.0)	0.467 (0.044-4.933)**
Children get more shots than are good for them.	Agree	21 (10.6)	178 (89.4)	6.122 (3.109-12.053)
	Neutral	26 (41.9)	36 (58.1)	1
	Disagree	3 (50.0)	3 (50.0)	0.722 (0.135-3.867)**
It is better for children to get fewer vaccines at the same time	Agree	7 (9.0)	71 (91.0)	3.381 (1.426-8.016)
	Neutral	36 (25.0)	108 (75.0)	1
	Disagree	7 (14.9)	40 (85.1)	1.905 (0.874-4.625)**
Role of healthcare professionals				
Has your healthcare provider ever advised you that MR vaccine was not necessary or had too many side effects?	No	46 (17.6)	215 (82.4)	1
	Yes	4 (50.0)	4 (50.0)	0.214 (0.052-0.887)

Was your doctor ever reluctant to administer MR vaccine you wanted for your child?	No	45 (17.4)	213 (82.6)	1
	Yes	4 (40.0)	6 (60.0)	0.317 (0.086-1.169)**

**not statistically significant with the output (vaccination status)

Parents who agree and believe that MR Vaccine is safe for their children are 15.525 times higher to give their children MR vaccination compare to parents who neutral about this, while parents who disagree and do not believe MR vaccine is safe are 42.2% less likely to give their child MR vaccine and it is statistically not significant. On other research on anti-vaccine movement, it is said that another cause that we need to look after is how public health itself failed to educate public and providers regarding the beneficial of vaccine, and failure of health system itself to develop data monitoring system to answer public's question with data that can be useful for convincing people. (Gregory A. Poland & Jacobson, 2001). Parents and their child who agree that they ever experience severe adverse reaction following MR vaccine are 41.9% less likely to get MR vaccination to their child compare to parents who neutral about this, while parents who disagree and never had adverse side effect of MR vaccine are 5.588 times higher to give their child MR vaccination compare to parent who neutral about this. Parents who agree about health care worker always provided them with enough information on side effect that might follow are 4.110 times higher to give their child MR vaccination compare to the neutral parents, while parents who disagree with health care worker who now explain to them regarding side effect of MR vaccination are 2.333 times higher to give their child MR vaccination compare to the neutral parents and it is statistically not significant.

Parents who fear their child will get hurt during MR vaccination are 56% less likely to give their children MR vaccine compare to parents who neutral about this, while parents who disagree and have no fear that their children might get hurt are 5.741 times higher to give their child MR vaccination. This is quite similar with the survey on children's preferences regarding influenza vaccine in 2011. They were asking to pick which one they prefer: shot or nasal spray. 69% of the children chose nasal spray because they avoid pain due to injection (Flood et al., 2011). Parents who think that pain after MR vaccination made them reconsider to give MR vaccine to their child are

35% less likely to give their child MR vaccination compare to the neutral group and it is statistically not significant while parents who disagree about this are 3.026 times higher to give their child MR vaccination. Parents who agree that they accept MR vaccine more if less pain is involved are 2.958 times higher to give their child MR vaccination compare to the neutral group, while parents who do not agree are 2.516 times higher to give MR vaccination to their child and it is statistically not significant. Parents who agree to trust health care worker to safely administer the MR vaccine are16.897 times higher to give their child MR vaccine compare to parents who in neutral group while parents who do not agree about health care worker to safely administering MR vaccine are 7 times higher to give their child MR vaccination and it is statistically not significant.

Parents who welcome the MR vaccination program are 10.491 times higher to give their children MR vaccine, compare to those parents who not welcome the MR vaccination program. Parents who would like medical consultation regarding MR vaccination are 9.066 times higher to get their child MR vaccination compare to those parents who do not want medical consultation regarding MR vaccination. Parents who prefer health centre/doctor to give MR vaccination are 1.794 times higher to give MR vaccination to their child compare to MR vaccination school based program and it is statistically not significant, while parents who prefer from door to door vaccination program are 50.9% less likely to give their child MR vaccination compare to the school based program and it is statistically not significant, and parents who prefer mass vaccination program are 5.158 times higher to give their child MR vaccination compare to MR vaccination school based program and it is statistically not significant. Parents who would let their child vaccinated by school based program are 5.119 times higher to give their child MR vaccination compare to parent who do not want to. Parents who said they want to refrain their child during mass vaccination campaign are 75.6% less likely to have their child to get MR vaccination compare to parents who do not want to refrain their child from MR vaccination program.

Parents who have difficulties to get their children to MR vaccination due to the schedule are 52.7% less likely to give their child MR vaccine, compare to those parents who easily follow the MR vaccination schedule. This is quite similar with the research in Michigan, United States regarding alternative vaccination schedule. They conclude

that 1 out of 10 parents using vaccination that not recommended by CDC. One of the surprising finding on this study is that there was a large number or parents who at risk for doing the same thing in the near future. (Dempsey et al., 2011). Parents who agree that following MR schedule is good for their child are 10.931 times higher to get their chil MR vaccination compare to parents who neutral about this, while parents who are disagree on this are 53.3% times likely to get their child MR vaccination and it is statistically not significant. Parents who agree with child get more shots are good for them are 6.122 times higher to get their child to get MR vaccination compare to parents who do think neutral about this, while parents who disagree are 53.3% are less likely to give their child MR vaccination compare to the parents who neutral about this and it is statistically not significant. Parents who agree that is its better for child to get fewer vaccine at the same time are 3.381 times higher to give their child MR vaccination compare to those parents who neutral about this, while parents who do not agree are 1.905 times higher to give their child MR vaccination compare to the parents who neutral about this. Parents who said that their health care provider ever advised them that MR vaccine was not necessary or had too many side effects are 78.6% less likely to give their child MR vaccination compare to parents who do said that their health care worker never advised about it. Parents who said their doctor ever reluctant to administered MR vaccination that they wanted are 68.3% less likely to give MR vaccination to their child compare to parents who their doctor never reluctant in giving MR vaccination and it is statistically not significant.

Chapter 5

Conclusion & Recommendation

This research conducted to see the association between vaccine hesitancy among parents/care giver and their child's MR Vaccination status. Place of the study is in Makassar city, Indonesia. This research using descriptive method to see the general characteristic of the respondents. An online self-questionnaire was used in this research for collecting data. All the respondents are parent/caregiver who lived in Makassar city for the last 10 years and have child aged 1-9 years old. This research is held from March to April 2019.

Characteristic of the respondents

From the relationship with the child, most of the respondents 78.1 % are the mother of the child. From the age or respondents, about 241 or 85.2 % are aged 30 years old and up. The other important thing on characteristic of the respondents are marital status (273 or 96.5 % are married). From the educational level, there are 250 (88.3 %) parent/care giver who has degree more than 4 years college degree. On the household income, 108 or 38.2 % are have income Rp. 7.500.000/16.305 thb. Most of them also Buginese, 169 (59.7 %). In Makassar there are 4 major ethnicity, Buginese, Makassarese, Torajanese and Mandarese, where Buginese is the largest number of population in Makassar.

Vaccination status

Out of 283 respondents, there are 229 or 80.9% of the respondents give MR Vaccine to their child. While the rest is 54 (19.1%) chose not to give MR Vaccination.

Contextual influences

Based on the Contextual influence variable, it consists of 6 parts. After doing chi-square, we got 4 parts that has correlation with the vaccination status of their child, that are media influences on decision for MR Vaccination (p-value 0.020), where parent who have had read/heard report on the media/social media regarding MR vaccination

are 0.331 times lower to give their children MR vaccine compare to the ones who hadn't read/heard report and statistically significant.

The second part is that influential leaders, gatekeepers and anti or pro-vaccination lobbies (p-value 0.000). Parent who get support from the leader on MR Vaccination are 3.993 times higher to give their children MR Vaccination compare to the ones that not get support from their leader and statistically significant.

The third part is that related to the historical influences. We asked the respondents about event in the past that related to the decision on MR Vaccination (p-value 0.070). Parents/care takers who remember any events in the past regarding MR Vaccination are 0.311 times lower to give their children MR Vaccination compare to the parents/care taker who did not remember the events in the past and statistically significant.

The fourth part is the Religion/culture/gender/socio-economic. We ask them about if they refuse the MR vaccine because they considered the ingredient include porcine or non-halal materials (p-value 0.000). Parents who refused to give their children MR Vaccine because they consider it's not halal are only 3.6% to give MR Vaccine to their child compare to parents who accept the MR Vaccine and significantly significant.

There are two parts that have no correlation with the vaccination status of the children. Those are from the politics/policies and geographic barriers that are 0.760 and 0.906 respectively. On the politics/policies side, we asked the participants that was the vaccination status is (pre)-school acceptance requirement. From the geographic barriers itself, we asked them was the long waiting time is the contributing factor from them to become hesitant to bring their child to get MR vaccination.

Individual or Group Influences

it's statistically significant..

The second part is from their belief, attitude about health and prevention. We asked them if they believe that there is another way to prevent the vaccine-preventable diseases (p-value 0.003). From the multivariate analysis, we found out that parents who do not believe that there are other (better) ways to prevent diseases by vaccine are 0.392 times lower to give their children vaccination compare to parents who believe so.

The third is based on their knowledge/awareness. The question that we asked is do they know the types of vaccine that their child need (p-value 0.000). From the result using multivariate analysis, parents/care giver who know which vaccines are needed for their children are 4.794 times higher to give their children vaccine compare to those who are not know.

The fourth part is the risk/benefit of the MR vaccine itself. The question that we were asking is about the how concern were they that MR vaccine is not safe (p-value 0.000). Result that we get from multivariate analysis was parents who concern that MR Vaccine might not be safe are 0.227 times lower to give their child MR Vaccine compare to those parents who think that MR Vaccine is safe and statistically significant.

The last part is do not have correlation with the vaccination status of the child. It is the part about Health system and providers-trust and personal experience (p-value 0.560).

Vaccine/vaccination

From this part, there are five part that we want to related it to the vaccination status of the child. The first part is that risk/benefit (scientific evidence). The question that we asked to the respondents is that do they believe the MR vaccine is safe (p-value 0.000). Parents who believe that MR Vaccine is safe for their children are 16.234 times higher to give their children vaccination compare to parents who think the opposite and statistically significant.

The second part is mode of transmission. We ask the parent is they fear that their children might get hurt during MR Vaccination process (p-value 0.000). Parents who fear their child will get hurt during MR vaccination are 0.124 times lower to give their children MR vaccine compare to parents who have no fear that their children might get hurt and statistically significant.

The third part is about design of vaccination program/mode of delivery (p-value 0.000). We asked parent how welcome they are with the vaccination programs. Parents who welcome the MR vaccination program are 10.491 times higher to give their children MR vaccine, compare to those parents who not welcome the MR vaccination program and statistically significant.

The fourth part of this variable is Vaccination schedule. We asked them about do they have difficulty following the vaccination schedule (p-value 0.028). Parents who have difficulties to get their children to MR vaccination due to the schedule are 0.473 times lower compare to those parents who easily follow the MR vaccination schedule.

The last part of this variable has not correlation with the vaccination status, which we ask the respondents that if the health care worker ever treated them without respect that made them hesitate or refuse to go back to the healthcare facility (p-value 0.966). Most of the participant said that they never get that kind of experience.

Conclusion

Vaccine hesitancy phenomena is happening all around the world. The cause is different each region. What makes vaccine hesitancy is something that we have to pay attention, because it can cause different level of attitude towards vaccination. It ranges from accepting it completely, accepting it but still not sure, refuse it but still not sure about the decision, or even completely refuse it. Even though vaccine hesitancy is happening in Indonesia for the last five years, as the MR vaccine coverage is getting lower, this research on vaccine hesitancy in urban are in Indonesia is the pilot project of it. Based on the objective was to find determinant factors of parental vaccine hesitancy on their children MR Vaccination in urban area of Indonesia. From the specific objective, this research was done to identify the association between contextual influences, individual/group influences and vaccine/vaccination to their MR Vaccination status.

Recommendation

1. This is the pilot project on vaccine hesitancy in Indonesia. We hope the authorities can take this into consideration and in the future to make another research with the same theme with larger number of population and wider region
2. We recommend for the local authorities to be more introduce the policy and the importance of MR vaccination at the same time with the help of health care workers.
3. We recommend to more aware the importance of vaccination to our child.
4. Government more open and clear discussing about the side effect of each vaccine than can occur

REFERENCES

Ahmad, N., Jahis, R., Kuay, L., Jamaluddin, R., & Aris, T. (2017). Primary immunization among children in malaysia: Reasons for incomplete vaccination. *J Vaccines Vaccin, 8*(358), 2.

Al-Lela, O. Q. B., Bahari, M. B., Al-Qazaz, H. K., Salih, M. R., Jamshed, S. Q., & Elkalmi, R. M. (2014). Are parents' knowledge and practice regarding immunization related to pediatrics' immunization compliance? a mixed method study. *BMC pediatrics, 14*(1), 20.

Alruwaili, A. A. S., Abo El-fetoh, N. M., Alruwaili, T. A. S., Alanazi, W. A. S., Alhazmi, H. H. R., Alanazi, N. A. B., . . . Alrwaili, A. H. (2018). Knowledge, Attitude and Practice of the Parents Regarding Child Vaccinations in Arar, Northern Saudi Arabia. *The Egyptian Journal of Hospital Medicine, 72*(9), 5178-5182. Retrieved from https://ejhm.journals.ekb.eg/article_10738_f3ffed9073bdf55bba2e34bafc1d5e67.pdf. doi:10.12816/ejhm.2018.10738

Barraza, L., Schmit, C., & Hoss, A. (2017). The Latest in Vaccine Policies: Selected Issues in School Vaccinations, Healthcare Worker Vaccinations, and Pharmacist Vaccination Authority Laws. *The Journal of law, medicine & ethics : a journal of the American Society of Law, Medicine & Ethics, 45*(1_suppl), 16-19. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28661302

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5503112/. doi:10.1177/1073110517703307

Benin, A. L., Wisler-Scher, D. J., Colson, E., Shapiro, E. D., & Holmboe, E. S. (2006). Qualitative analysis of mothers' decision-making about vaccines for infants: the importance of trust. *Pediatrics, 117*(5), 1532-1541. doi:10.1542/peds.2005-1728

Bester, J. C. (2015). Vaccine Refusal and Trust: The Trouble With Coercion and Education and Suggestions for a Cure. *Journal of Bioethical Inquiry, 12*(4), 555-559. Retrieved from https://doi.org/10.1007/s11673-015-9673-1. doi:10.1007/s11673-015-9673-1

Bowes, J. (2016). Measles, misinformation, and risk: personal belief exemptions and the MMR vaccine. *J Law Biosci, 3*(3), 718-725. doi:10.1093/jlb/lsw057

Catalan-Matamoros, D., & Peñafiel-Saiz, C. (2019). How is communication of vaccines in traditional media: a systematic review. *Perspectives in Public Health, 139*(1), 34-43. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/1757913918780142. doi:10.1177/1757913918780142

CDC. (2018). MMR Vaccination | What You Should Know | Measles, Mumps, Rubella | CDC. . Retrieved from https://www.cdc.gov/vaccines/vpd/mmr/public/index.html.

Chapter. (n.d). Chapter 12. Retrieved from https://www2.census.gov/geo/pdfs/reference/GARM/Ch12GARM.pdf.

Clarke, C. E. (2011). A case of conflicting norms? Mobilizing and accountability information in newspaper coverage of the autism–vaccine controversy. *Public Understanding of Science, 20*(5), 609-626. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/0963662509359490. doi:10.1177/0963662509359490

Collange, F., Fressard, L., Pulcini, C., Sebbah, R., Peretti-Watel, P., & Verger, P. (2016). General practitioners' attitudes and behaviors toward HPV vaccination: A French national survey. *Vaccine, 34*(6), 762-768. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X15018654. doi:https://doi.org/10.1016/j.vaccine.2015.12.054

Committee on the Assessment of Studies of Health Outcomes Related to the Recommended Childhood Immunization, S., Board on Population, H., Public Health, P., & Institute of, M. (2013). In *The Childhood Immunization Schedule and Safety: Stakeholder Concerns, Scientific Evidence, and Future Studies*. Washington (DC): National Academies Press (US)

Dempsey, A. F., Schaffer, S., Singer, D., Butchart, A., Davis, M., & Freed, G. L. (2011). Alternative vaccination schedule preferences among parents of young children. *Pediatrics, 128*(5), 848-856. doi:10.1542/peds.2011-0400

Dhand, N. K., & Khatkar, M. S. (2014). Statulator: An online statistical calculator. Sample Size Calculator for Estimating a Single Proportion. Accessed 10 February 2019 Retrieved from http://statulator.com/SampleSize/ss1P.html.

Downey, L., Tyree, P. T., Huebner, C. E., & Lafferty, W. E. (2010). Pediatric Vaccination and Vaccine-Preventable Disease Acquisition: Associations with Care by Complementary and Alternative Medicine Providers. *Maternal and Child Health Journal, 14*(6), 922-930. Retrieved from https://doi.org/10.1007/s10995-009-0519-5. doi:10.1007/s10995-009-0519-5

Dube, E., Farrands, A., Lemaitre, T., Boulianne, N., Sauvageau, C., Boucher, F. D., . . . Gagneur, A. (2019). Overview of knowledge, attitudes, beliefs, vaccine hesitancy and vaccine acceptance among mothers of infants in Quebec, Canada. *Hum Vaccin Immunother, 15*(1), 113-120. doi:10.1080/21645515.2018.1509647

Dubé, E., Gagnon, D., & MacDonald, N. E. (2015). Strategies intended to address vaccine hesitancy: Review of published reviews. *Vaccine, 33*(34), 4191-4203. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X15005058. doi:https://doi.org/10.1016/j.vaccine.2015.04.041

Dube, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. (2013). Vaccine hesitancy: an overview. *Hum Vaccin Immunother, 9*(8), 1763-1773. doi:10.4161/hv.24657

Eden, L. M., Macintosh, J. L., Luthy, K. E., & Beckstrand, R. L. (2014). Minimizing pain during childhood vaccination injections: improving adherence to vaccination schedules. *Pediatrics Health, Medicines and Therapeutics*, 127-140.

Ernst, E. (2001). Rise in popularity of complementary and alternative medicine: reasons and consequences for vaccination. *Vaccine, 20*, S90-S93. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X01002900. doi:https://doi.org/10.1016/S0264-410X(01)00290-0

Flood, E. M., Ryan, K. J., Rousculp, M. D., Beusterien, K. M., Block, S. L., Hall, M. C., & Mahadevia, P. J. (2011). A survey of children's preferences for influenza vaccine attributes. *Vaccine, 29*(26), 4334-4340. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X11005287. doi:https://doi.org/10.1016/j.vaccine.2011.04.018

Goldstein, S., MacDonald, N. E., & Guirguis, S. (2015). Health communication and vaccine hesitancy. *Vaccine, 33*(34), 4212-4214. Retrieved from

http://www.sciencedirect.com/science/article/pii/S0264410X1500506X. doi:https://doi.org/10.1016/j.vaccine.2015.04.042

Gowda, C., Schaffer, S. E., Kopec, K., Markel, A., & Dempsey, A. F. (2014). Does the relative importance of MMR vaccine concerns differ by degree of parental vaccine hesitancy? *Human Vaccines & Immunotherapeutics, 9*(2), 430-436. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23032161. doi:10.4161/hv.22065

Gust, D. A., Darling, N., Kennedy, A., & Schwartz, B. (2008). Parents with doubts about vaccines: which vaccines and reasons why. *Pediatrics, 122*(4), 718-725. doi:10.1542/peds.2007-0538

Gust, D. A., Woodruff, R., Kennedy, A., Brown, C., Sheedy, K., & Hibbs, B. (2003). Parental perceptions surrounding risks and benefits of immunization. *Seminars in Pediatric Infectious Diseases, 14*(3), 207-212. Retrieved from http://www.sciencedirect.com/science/article/pii/S1045187003000359. doi:https://doi.org/10.1016/S1045-1870(03)00035-9

Hough-Telford, C., Kimberlin, D. W., Aban, I., Hitchcock, W. P., Almquist, J., Kratz, R., & O'Connor, K. G. (2016). Vaccine Delays, Refusals, and Patient Dismissals: A Survey of Pediatricians. *Pediatrics, 138*(3), e20162127. Retrieved from https://pediatrics.aappublications.org/content/pediatrics/138/3/e20162127.full.pdf. doi:10.1542/peds.2016-2127

Hussain, A., Ali, S., Ahmed, M., & Hussain, S. (2018). The Anti-vaccination Movement: A Regression in Modern Medicine. *Cureus, 10*(7), e2919-e2919. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/30186724

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6122668/. doi:10.7759/cureus.2919

Indonesia, D. K. R. (2013). Undang-Undang Republik Indonesia Nomor 36 Tahun 2009 Tentang Kesehatan. *Diakses dari bpkp. go. id pada tanggal, 12*.

Indonesia, U. (2019). Retrieved from https://www.unicef.org/indonesia/id/Preview_FA_UNICEF_MR_Paket_Advokasi.REV27Jun18.pdf

Indonesia, W. (2017). Reaching more children to get MR vaccine. Retrieved from http://www.searo.who.int/indonesia/topics/immunization/mr_reaching/en/

Jeong, H., & Lee, W. (2016). The level of collapse we are allowed: Comparison of different response scales in Safety Attitudes Questionnaire. *Biom Biostat Int J, 4*(4), 00100.

Jilg, W., Schmidt, M., & Deinhardt, F. (1989). Vaccination against Hepatitis B: Comparison of Three Different Vaccination Schedules. *The Journal of Infectious Diseases, 160*(5), 766-769. Retrieved from https://doi.org/10.1093/infdis/160.5.766. doi:10.1093/infdis/160.5.766

Kane, M. A. (1998). Commentary: public perception and the safety of immunization. *Vaccine, 16 Suppl*, S73-75.

Kang, G. J., Ewing-Nelson, S. R., Mackey, L., Schlitt, J. T., Marathe, A., Abbas, K. M., & Swarup, S. (2017). Semantic network analysis of vaccine sentiment in online social media. *Vaccine, 35*(29), 3621-3638. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X17306886. doi:https://doi.org/10.1016/j.vaccine.2017.05.052

Kaufman, J., Ryan, R., Walsh, L., Horey, D., Leask, J., Robinson, P., & Hill, S. (2018). Face-to-face interventions for informing or educating parents about early childhood vaccination. *Cochrane Database of Systematic Reviews*(5). Retrieved

from https://doi.org//10.1002/14651858.CD010038.pub3. doi:10.1002/14651858.CD010038.pub3

Kolff, C. A., Scott, V. P., & Stockwell, M. S. (2018). The use of technology to promote vaccination: A social ecological model based framework. *Human vaccines & immunotherapeutics, 14*(7), 1636-1646. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29781750 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6067841/. doi:10.1080/21645515.2018.1477458

Kotrlik, J., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information technology, learning, and performance journal, 19*(1), 43.

Kriss, J. L., Goodson, J., Machekanyanga, Z., Shibeshi, M. E., Daniel, F., Masresha, B., & Kaiser, R. (2016). Vaccine receipt and vaccine card availability among children of the apostolic faith: analysis from the 2010-2011 Zimbabwe demographic and health survey. *The Pan African medical journal, 24*, 47-47. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27642388 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5012723/. doi:10.11604/pamj.2016.24.47.8663

Lane, S., MacDonald, N. E., Marti, M., & Dumolard, L. (2018). Vaccine hesitancy around the globe: Analysis of three years of WHO/UNICEF Joint Reporting Form data-2015-2017. *Vaccine, 36*(26), 3861-3867. doi:10.1016/j.vaccine.2018.03.063

Larson, H. J., Clarke, R. M., Jarrett, C., Eckersberger, E., Levine, Z., Schulz, W. S., & Paterson, P. (2018). Measuring trust in vaccination: A systematic review. *Human Vaccines & Immunotherapeutics, 14*(7), 1599-1609. Retrieved from https://doi.org/10.1080/21645515.2018.1459252. doi:10.1080/21645515.2018.1459252

Larson, H. J., Cooper, L. Z., Eskola, J., Katz, S. L., & Ratzan, S. (2011). Addressing the vaccine confidence gap. *The Lancet, 378*(9790), 526-535. Retrieved from http://www.sciencedirect.com/science/article/pii/S0140673611606788. doi:https://doi.org/10.1016/S0140-6736(11)60678-8

Larson, H. J., de Figueiredo, A., Xiahong, Z., Schulz, W. S., Verger, P., Johnston, I. G., . . . Jones, N. S. (2016). The State of Vaccine Confidence 2016: Global Insights Through a 67-Country Survey. *EBioMedicine, 12*, 295-301. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27658738. doi:10.1016/j.ebiom.2016.08.042

Larson, H. J., Jarrett, C., Eckersberger, E., Smith, D. M., & Paterson, P. (2014). Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007-2012. *Vaccine, 32*(19), 2150-2159. doi:10.1016/j.vaccine.2014.01.081

Larson, H. J., Jarrett, C., Schulz, W. S., Chaudhuri, M., Zhou, Y., Dube, E., . . . Wilson, R. (2015). Measuring vaccine hesitancy: The development of a survey tool. *Vaccine, 33*(34), 4165-4175. doi:10.1016/j.vaccine.2015.04.037

Lieu, T. A., Ray, G. T., Klein, N. P., Chung, C., & Kulldorff, M. (2015). Geographic Clusters in Underimmunization and Vaccine Refusal. *Pediatrics, 135*(2), 280-289. Retrieved from https://pediatrics.aappublications.org/content/pediatrics/135/2/280.full.pdf. doi:10.1542/peds.2014-2715

Luthy, K. E., Beckstrand, R. L., & Meyers, C. J. (2013). Common perceptions of parents requesting personal exemption from vaccination. *J Sch Nurs, 29*(2), 95-103. doi:10.1177/1059840512455365

MacDonald, N. E. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine, 33*(34), 4161-4164. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X15005009. doi:https://doi.org/10.1016/j.vaccine.2015.04.036

Makassar, B. K. (2012). Luas wilayah, Jumlah Desa/Kelurahan, Jumlah Penduduk, Jumlah Rumah Tangga, dan Kepadatan Penduduk Menurut Kkecamatan Kota Makassar Tahun 2012. Retrieved from https://docplayer.info/85659-Luas-wilayah-jumlah-desa-kelurahan-jumlah-penduduk-jumlah-rumah-tangga-dan-kepadatan-penduduk-menurut-kecamatan-kota-makassar-tahun-2012.html.

Makassar, B. K. (2019). Daftar Kecamatan dan Kelurahan di Kota Makassar. In Kecamatan-di-makassar-kota (Ed.), *jpg* (Vol. 268 kb).

Massimi, A., Rosso, A., Marzuillo, C., Prencipe, G. P., De Soccio, P., Adamo, G., . . . Villari, P. (2017). Childhood vaccinations. Validation of a tool for measuring knowledge, attitudes and vaccine hesitancy in pregnant women. *Epidemiology, Biostatistics and Public Health, 14*(4).

Mattulada. (1982). South Sulawesi, its ethnicity and way of life. *20*, 4-22.

McCauley, M. M., Kennedy, A., Basket, M., & Sheedy, K. (2012). Exploring the choice to refuse or delay vaccines: a national survey of parents of 6- through 23-month-olds. *Acad Pediatr, 12*(5), 375-383. doi:10.1016/j.acap.2012.06.007

Murdin, A. D., Barreto, L., & Plotkin, S. (1996). Inactivated poliovirus vaccine: past and present experience. *Vaccine, 14*(8), 735-746. Retrieved from http://www.sciencedirect.com/science/article/pii/0264410X9500211I. doi:https://doi.org/10.1016/0264-410X(95)00211-I

Omer, S. B., Salmon, D. A., Orenstein, W. A., deHart, M. P., & Halsey, N. (2009). Vaccine Refusal, Mandatory Immunization, and the Risks of Vaccine-Preventable Diseases. *360*(19), 1981-1988. Retrieved from https://www.nejm.org/doi/full/10.1056/NEJMsa0806477. doi:10.1056/NEJMsa0806477

Opel, D. J., Mangione-Smith, R., Taylor, J. A., Korfiatis, C., Wiese, C., Catz, S., & Martin, D. P. (2011). Development of a survey to identify vaccine-hesitant parents: the parent attitudes about childhood vaccines survey. *Hum Vaccin, 7*(4), 419-425.

Organization, W. H. (2019). Ten threats to global health in 2019. 2019. *Retrieved January*.

Perlman, S., Wamai, R. G., Bain, P. A., Welty, T., Welty, E., & Ogembo, J. G. (2014). Knowledge and Awareness of HPV Vaccine and Acceptability to Vaccinate in Sub-Saharan Africa: A Systematic Review. *PLOS ONE, 9*(3), e90912. Retrieved from https://doi.org/10.1371/journal.pone.0090912. doi:10.1371/journal.pone.0090912

Pillai, R. K. (2015). Epidemiological Methods for Pharmaco-Vigilance: The Case of Vaccine Safety. *Journal of Pharmacovigilance*.

Poland, G. A., & Jacobson, R. M. (2001). Understanding those who do not understand: a brief review of the anti-vaccine movement. *Vaccine, 19*(17), 2440-2445. Retrieved from

http://www.sciencedirect.com/science/article/pii/S0264410X00004692. doi:https://doi.org/10.1016/S0264-410X(00)00469-2

Poland, G. A., & Spier, R. (2010). Fear, misinformation, and innumerates: how the Wakefield paper, the press, and advocacy groups damaged the public health. *Vaccine, 28*(12), 2361-2362. doi:10.1016/j.vaccine.2010.02.052

Pugliese-Garcia, M., Heyerdahl, L. W., Mwamba, C., Nkwemu, S., Chilengi, R., Demolis, R., . . . Sharma, A. (2018). Factors influencing vaccine acceptance and hesitancy in three informal settlements in Lusaka, Zambia. *Vaccine, 36*(37), 5617-5624. doi:10.1016/j.vaccine.2018.07.042

Pusdatin. (2018). Imunisasi Situasi Campak dan Rubella di Indonesia. Retrieved from http://www.depkes.go.id/download.php?file=download/pusdatin/infodatin/imunisasi%20campak%202018.pdf.

Pusdatin. (2019). Secara Makro, Cakupan imunisasi campak-rubella capai 87%. Retrieved from (http://www.depkes.go.id/article/view/19010800004/secara-makro-cakupan-imunisasi-campak-rubella-capai-87-.html.

Rahman, M., Laz, T. H., & Berenson, A. B. (2013). Geographic variation in human papillomavirus vaccination uptake among young adult women in the United States during 2008–2010. *Vaccine, 31*(47), 5495-5499. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264410X1301253X. doi:https://doi.org/10.1016/j.vaccine.2013.09.022

Reimer, R. A., Schommer, J. A., Houlihan, A. E., & Gerrard, M. (2014). Ethnic and gender differences in HPV knowledge, awareness, and vaccine acceptability among White and Hispanic men and women. *J Community Health, 39*(2), 274-284. doi:10.1007/s10900-013-9773-y

Robison, S. G., Groom, H., & Young, C. (2012). Frequency of alternative immunization schedule use in a metropolitan area. *Pediatrics, 130*(1), 32-38. doi:10.1542/peds.2011-3154

Rosselli, R., Martini, M., & Bragazzi, N. L. (2016). The old and the new: vaccine hesitancy in the era of the Web 2.0. Challenges and opportunities. *Journal of preventive medicine and hygiene, 57*(1), E47-E50. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27346940

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4910443/.

Ruijs, W. L., Hautvast, J. L., Kerrar, S., Van der Velden, K., & Hulscher, M. E. (2013). The role of religious leaders in promoting acceptance of vaccination within a minority group: a qualitative study. *BMC public health, 13*(1), 511.

SAGE. (2015). Report of The Sage Working Group on Vaccine Hesitancy. . Retrieved from https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf.

Salmon, D. A., Moulton, L. H., Omer, S. B., DeHart, M. P., Stokley, S., & Halsey, N. A. (2005). Factors associated with refusal of childhood vaccines among parents of school-aged children: a case-control study. *Arch Pediatr Adolesc Med, 159*(5), 470-476. doi:10.1001/archpedi.159.5.470

Schwartz, J. L. (2012). The first rotavirus vaccine and the politics of acceptable risk. *The Milbank quarterly, 90*(2), 278-310. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/22709389

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3460207/. doi:10.1111/j.1468-0009.2012.00664.x

Setiawan. (n.d). Arti kata kota - Kamus Besar Bahasa Indonesia (KBBI) Online. . Retrieved from https://kbbi.web.id/kota.

Simone, B., Carrillo-Santisteve, P., & Lopalco , P. L. (2012). Healthcare workers' role in keeping MMR vaccination uptake high in Europe: a review of evidence. *Eurosurveillance, 17*(26), 20206. Retrieved from https://www.eurosurveillance.org/content/10.2807/ese.17.26.20206-en. doi:doi:https://doi.org/10.2807/ese.17.26.20206-en

Smith, T. C. (2017). Vaccine Rejection and Hesitancy: A Review and Call to Action. *Open forum infectious diseases, 4*(3), ofx146-ofx146. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28948177

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5597904/. doi:10.1093/ofid/ofx146

Spier, R. E. (2001). Perception of risk of vaccine adverse events: a historical perspective. *Vaccine, 20 Suppl 1*, S78-84; discussion S75-77.

Stahl, J. P., Cohen, R., Denis, F., Gaudelus, J., Martinot, A., Lery, T., & Lepetit, H. (2016). The impact of the web and social networks on vaccination. New challenges and opportunities offered to fight against vaccine hesitancy. *Médecine et Maladies Infectieuses, 46*(3), 117-122. Retrieved from http://www.sciencedirect.com/science/article/pii/S0399077X16000342. doi:https://doi.org/10.1016/j.medmal.2016.02.002

Stefanoff, P., Mamelund, S. E., Robinson, M., Netterlid, E., Tuells, J., Bergsaker, M. A., . . . Yarwood, J. (2010). Tracking parental attitudes on vaccination across European countries: The Vaccine Safety, Attitudes, Training and Communication Project (VACSATC). *Vaccine, 28*(35), 5731-5737. doi:10.1016/j.vaccine.2010.06.009

Sticchi, L., Alberti, M., Alicino, C., & Crovari, P. (2010). The intradermal vaccination: past experiences and current perspectives. *Journal of preventive medicine and hygiene, 51*(1).

VIS. (2018). Retrieved from Retrieved from https://www.cdc.gov/vaccines/hcp/vis/vis-statements/mmr.pdf

WHO. (2018). Immunization, Vaccines and Biologicals. Addressing Vaccine Hesitancy. Retrieved from https://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/

Wise, J. (2001). Pfizer accused of testing new drug without ethical approval. *BMJ (Clinical research ed.), 322*(7280), 194-194. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/11159610

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1119465/.

Wray, R. J., Jupka, K., Ross, W., Dotson, D., Whitworth, A. R., & Jacobsen, H. (2007). How can you improve vaccination rates among older African Americans? Patients want you to address their fear of drug interactions and allergic reactions. *Journal of Family Practice, 56*(11), 925-930.

Yosephine, D. P. (2017). Indonesia National Immunization Program. Retrieved from https://www.fondation-merieux.org/wp-content/uploads/2017/10/vaccinology-2017-prima-yosephine.pdf

Zimet, G. D., Rosberger, Z., Fisher, W. A., Perez, S., & Stupiansky, N. W. (2013). Beliefs, behaviors and HPV vaccine: Correcting the myths and the misinformation.

Preventive Medicine, 57(5), 414-418. Retrieved from http://www.sciencedirect.com/science/article/pii/S009174351300176X. doi:https://doi.org/10.1016/j.ypmed.2013.05.013

APPENDIX

Appendix A: Questionnaire

AF 02-12

The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University

Jamjuree 1 Building, 2nd Floor, Phyathai Rd., Patumwan district, Bangkok 10330, Thailand,
Tel/Fax: 0-2218-3202, 0-2218-3409 E-mail: eccu@chula.ac.th

COA No. 141/2019

Certificate of Approval

Study Title No. 076.1/62 : PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA

Principal Investigator : MR. ARDYANSYAH ARTHIN

Place of Proposed Study/Institution : College of Public Health Sciences, Chulalongkorn University

The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University, Thailand, has approved constituted in accordance with Belmont Report 1979, Declaration of Helsinki 2013, Council for International Organizations of Medical Sciences (CIOM) 2016, Standards of Research Ethics Committee (SREC) 2013, and National Policy and guidelines for Human Research 2015.

Signature: Prida Tasanapradit
(Associate Prof. Prida Tasanapradit, M.D.)
Chairman

Signature: Nuntaree Chaichanawongsaroj
(Assistant Prof. Nuntaree Chaichanawongsaroj, Ph.D.)
Secretary

Date of Approval : 27 May 2019 Approval Expire date : 26 May 2020

The approval documents including;

1) Research proposal
2) Participant Information Sheet and Consent Form
3) Researcher
4) Questionnaire

Protocol No. 076.1/62
Date of Approval 27 MAY 2019
Approval Expire Date 26 MAY 2020

The approved investigator must comply with the following conditions:

1. *The research/project activities must end on the approval expired date of the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (RECCU). In case the research/project is unable to complete within that date, the project extension can be applied one month prior to the RECCU approval expired date.*
2. *Strictly conduct the research/project activities as written in the proposal.*
3. *Using only the documents that bearing the RECCU's seal of approval with the subjects/volunteers (including subject information sheet, consent form, invitation letter for project/research participation (if available).*
4. *Report to the RECCU for any serious adverse events within 5 working days*
5. *Report to the RECCU for any change of the research/project activities prior to conduct the activities.*
6. *Final report (AF 02-14) and abstract is required for a one year (or less) research/project and report within 30 days after the completion of the research/project. For thesis, abstract is required and report within 30 days after the completion of the research/project.*
7. *Annual progress report is needed for a two- year (or more) research/project and submit the progress report before the expire date of certificate. After the completion of the research/project processes as No. 6.*

AF 04-07

Participation Information Sheet

Title of the research project :	**PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA**
Name of the principal researcher :	**Mr. Ardyansyah Arthin**
Position :	**Master of Public Health Student**
Address in Thailand:	**Ratchaprarop Tower Mansion. Room 1617. 14 Khwaeng Makkasan, Khet Ratchadewi, Krung Thep Maha Nakhon 10400**
Address in Indonesia:	**Jl. Tanjung Raya 3 No. 71, Makassar, South Sulawesi, Indonesia. 90134.**
Mobile phone:	**(+66) 970050042**
E-mail:	**ardyarthin@yahoo.com**

1. You are invited to take part in this research project. Before you decide to join the project, it is necessary for you to understand why this research project is being conducted and what it involves. Please take time to read the following information carefully. If some statements are unclear, you may ask or require further information.

2. This research project is organized for to find determinant factors of parental vaccine hesitancy on their children MR vaccination in urban area of Indonesia; the benefits expected to be obtained from this research is to find association between contextual influences with parental hesitancy and their children MR vaccination in the urban area of Indonesia.

3. You are invited to take part in this research because you have child *aged 12 months and not more than 9 years old,* total number of the research participants is at least 300, the duration of the research period is from 30th March to 30th July 2019.

4. After you have decided to take part in this research project, the researcher would like you to fill the Google Form, about certain issues that is Vaccine Hesitancy on MR Vaccination, spending approximately *30-45* minutes to fill the form, allow you to answer the questionnaires on your mobile phone. There are in total *82* questions.

Approval No. 076.1/62
Date of Approval 27 MAY 2019
Approval Expire Date 26 MAY 2020

5. You may feel uneasy or somewhat unhappy with some questions and you have the right not to answer those questions. This includes your right to withdraw from the research project at any moment without advanced notification. Your decision not to take part in or to withdraw from this research project will not affect you in anyway.

6. Your personal information will be kept and will not be revealed to the public as information about an individual but the research result will be reported as a whole image. People who will have the right to access your information will be those who are involved with this research and the Research Ethics Review Committee for Research Involving Human Subjects only.

7. This research will not cost you anything and there's no payment from the researchers regarding on this research.

8. If you have any questions, at all times please make further inquiries by contacting the researcher. If the researcher has further information that may benefit or damage the research, he/she must let you know as quickly as possible so as to enable the research sampling population/participants to decide whether they still want to take part in the research.

9. If you are not treated in accordance with the aforementioned information, you will be able to file a complaint to the *Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (RECCU), Jamjuree 1 Bldg., 2nd Fl., 254 Phyathai Rd., Pathumwan district, Bangkok 10330, Thailand, Tel/Fax. 0-2218-3202 E-mail: eccu@chula.ac.th*

Informed Consent Form

Address/Sub-District : _____

Date...../Month...../Year.....

Code number of participant: _____

I, the signatory of this letter, wish to consent to take part in this research project.

Title of the research project:	**PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA**
Name of the principal researcher:	**Mr. Ardyansyah Arthin**
Contact address :	**Ratchaprarop Tower Mansion. Room 1617. 14 Khwaeng Makkasan, Khet Ratchadewi, Krung Thep Maha Nakhon 10400**
Mobile telephone number:	**(+66) 970050042**

I have been notified of the details of the research rationale and the research objectives, details of the stages that I must go through or must be treated, as well as the risks/dangers and the benefits to be obtained from this research. I have thoroughly read the details in the document providing information for the research participants and have received explanations from the researcher so that I am able clearly to understand the information.

I therefore apply to take part in this research project, as specified in the document providing information for research participants. Concerning this, I consent to response to the questionnaire on Parent Hesitancy on Their Children Measles Rubella (MR) Vaccination of Urban Area in Indonesia and it will take 30-45 minutes to fill the questionnaire and will be done 1 (one) time. All personal information about me will be kept in confidential. Result of the study will be described by using the overall picture. Any personal information which could be able to identify me will not be described in the report.

I have the right to withdraw from the research at any time according without having to state the reason. This withdrawal will in no way negatively affect me.

I have been assured and confirm that the researcher will treat me in accordance with what is specified in the document providing information for the research participants and any information about me will be treated by the researcher as confidential. The research will be

Protocol No. 076.1/62
Date of Approval 27 MAY 2019
Approval Expire Date 26 MAY 2020

presented as a whole picture only. No information in the report will lead to identifying me as an individual, except when I consent to it so doing.

If I am not treated according to what is specified in the document providing information for the research participants, I have known that i can report to Mr. Ardyansyah Arthin, principal researcher, Master Student at College of Public Health Sciences, Tel: 0970050042, e-mail address : ardyarthin@yahoo.com, or to the *Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (RECCU). Jamjuree 1 Bldg., 2nd Fl., 254 Phyathai Rd., Patumwan district, Bangkok 10330, Thailand, Tel./Fax. 0-2218-3202 E-mail: eccu@chula.ac.th.)*

I have signed my name hereto in the presence of a witness. I have also received a copy of the document providing information for the research participants and a copy of the letter of consent.

Researcher's name : Ardyansyah Arthin	Participant's name: .....
Signature of the researcher.....	Signature of participant : .....
Date ____/____/____	Date ____/____/____
(Day/month/year)	(Day/month/year)

If illiterate

I have witnessed the accurate reading of the consent form to the potential participant, and the individual had the opportunity to ask questions. I confirm that the individual has given consent freely

Witness's name.....

Witness's signature .....

Date ____/____/____

(Day/month/year)

Protocol No. 076.1/62

Date of Approval 27 MAY 2019

Approval Expire Date 26 MAY 2020

Appendix C : Self-administered Questionnaires

"PARENT VACCINE HESITANCY ON THEIR CHILDREN MEASLES AND RUBELLA (MR) VACCINATION OF URBAN AREA IN INDONESIA"

Respondent Sub-District : .....

Date : .....

Section 1. General Characteristic

1. Is this child your first born? ☐ Yes ☐ No
2. What is your relationship to this child?
   ☐ Mother ☐ Father ☐ Other _____
3. How old are you? _____ years old
4. What is your current marital status?
   ☐ Single ☐ Married ☐ Widowed ☐ Separated ☐ Divorced
5. What is the highest level of education that you have reached?
   ☐ 8th grade or less
   ☐ Some high school, but not a graduate
   ☐ High school graduate or GED
   ☐ Some college or 2 year degree 4-year college degree
   ☐ More than 4-year college degree
6. What is your approximate household income?
   ☐ Rp. 3.000.000 or less ☐ Rp. 3.000.001 - 5.000000
   ☐ Rp. 5.000.001- 7.500.000 ☐ Rp. 7.500.001 or more
7. How many children are in your household ?
   ☐ One ☐ Two
   ☐ Three ☐ Four or more
8. What is your race ?
   ☐ Bugis ☐ Makassar ☐ Other, please specify _____
   ☐ Toraja ☐ Mandar

Section 2. Vaccination Status

9. How old is your child ? _____ years old.

9.1. If you have more than 1 children aged 1-9 years old, how old is the oldest child ?

_____ years old

10. Does your child receive MR Vaccine ?

Yes (continue to 10.1) ☐ No ☐ Don't Know ☐

10.1. How many dose of MR Vaccine does your child receive ?

☐ 1 Dose ☐ 2 Doses ☐ More than 2 Doses

11. (Based on the vaccination book) How old does your child receive MR Vaccine ? (You allowed to choose more than 1 anwer)

☐ Before 12 months

☐ 12-15 months

☐ 1.4 years (16 months) - 3 years

☐ 4 - 6 Years

☐ More than 6 years

Section 3. Contextual Influences

3.1. Communication and media environment (media, social media, leader's opinion, free voice opinion)

12. Who do you trust the most for information regarding MR Vaccine ?

☐ Doctor/Nurse/Midwife ☐ Religion leaders

☐ Government ☐ Celebrity

☐ Other : _____

13. Have reports you heard/read in the media/or social media made you re-consider the choice to give your children MR Vaccine ?

Yes (Please continue to 13.1) ☐ No (Go to 14) ☐ Don't Know (Go to 14) ☐

13.1. Do you share information related to MR vaccination within your social media network?

Yes ☐ No ☐ Don't Know ☐

13.2. Do you recall MR vaccine that was positively debated in the media?

Yes ☐ No ☐ Don't Know ☐

13.3. Do you believe in reports in the media by parents claiming to have lost a child to a MR vaccine?

Yes ☐ No ☐ Don't Know ☐

3.2. Influential leaders, gatekeepers and anti-or pro-vaccination lobbies

14. Some groups or leaders do not agree to MR vaccination for different reasons. In general, do you agree or disagree with these groups?

Strongly Agree ☐ Agree ☐ Not Sure ☐ Disagree ☐ Strongly Disagree ☐

15. Do leaders (religious, political, teachers, health care workers) in your community support MR vaccines for infants and children?

Yes ☐ No ☐ Don't Know ☐

16. Would it trigger doubts to have your child vaccinated, if a celebrity advocates against MR vaccine?

Strongly Agree ☐ Agree ☐ Not Sure ☐ Disagree ☐ Strongly Disagree ☐

17. Has your imam/priest/rabbi ever advocated against MR vaccination?

Yes (Proceed to No. 17.1) ☐ No (Proceed to No. 18) ☐ Don't Know (Proceed to No. 18) ☐

17.1. Did you follow your imam/priest/rabbi's advice to against MR vaccine?

Yes ☐ No ☐ Don't Know ☐

3.3. Historical influences

18. Do you remember any events in the past that would discourage you from getting MR vaccine for your children?

Yes ☐ No ☐ Don't Know ☐

19. Has your community ever felt the need to urgently introduce a new vaccine?

Yes	No	Don't Know
☐	☐	☐

20. Has your community in the past refused to accept MR vaccine ?

Yes	No	Don't Know
☐	☐	☐

3.4. Religion/Culture/Gender/Socio Economic

21. Do you know anyone who does not take a MR vaccine because of religious or cultural reasons?

Yes	No	Don't Know
☐	☐	☐

22. Does your religion/philosophy/culture recommend against MR vaccine?

Yes	No	Don't Know
☐	☐	☐

23. Have you ever refused a vaccine as you considered it to include porcine or other animal derived ingredients (non-halal)?

Yes	No	Don't Know
☐	☐	☐

24. Would you refuse MR vaccine for your child if the vaccinator was male/female or from a different ethnic background/religion than yourself?

Yes	No	Don't Know
☐	☐	☐

3.5. Politics/Policies (Mandates)

25. Do you trust, that your government is making decisions in your best interest with respect to what vaccines are provided?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

26. Did you ever disagree with the choice of MR vaccine or MR vaccination recommendation provided by your government?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

27. I'm convinced that my government purchases the highest quality of MR vaccines.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

28. Did you ever have the impression your government/health care provider did not provide you with the best vaccine on the market?

Yes	No	Don't Know
☐	☐	☐

29. The only reason I have my child get MR Vaccine is so they can enter daycare or school.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

30. Does your child's daycare/school require/advice to have your children to get MR vaccine?

Yes	No	Don't Know
☐	☐	☐

3.6. Geographic Barrier

31. Has long waiting time at clinic prevented you from getting you child get MR immunisation ?

Yes	No	Don't Know
☐	☐	☐

32. What is the maximum amount of time you would be able or willing to spend to get a vaccine for yourself or your children?

Less than 30 minutes	30 minutes to 1 hour	1 hour to 1.5 hours	1.5 to 2 hours	more than 2 hours
☐	☐	☐	☐	☐

33. If you have to spend more than one hour getting a vaccine, is it important enough to travel for it?

Yes	No	Don't Know
☐	☐	☐

Section 4. Individual and Group Influences

4.1. Experience with past vaccine

34. Do most children tolerate vaccination very well?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

35. Have you or someone you know ever had a bad reaction to MR vaccine which made you reconsider getting vaccination?

Yes	No	Don't Know
☐	☐	☐

36. Do you know of a child with a serious disease/disability because they were not get MR vaccination?

Yes	No	Don't Know
☐	☐	☐

37. Do you know of anyone who has had a bad reaction to a MR Vaccine shot?

Yes	No	Don't Know
☐	☐	☐

38. Have you heard of anyone who was disabled after receiving a MR vaccine?

Yes	No	Don't Know
☐	☐	☐

39. Do experiences with pain with past immunisation prevent your child from getting MR immunisation?

Yes	No	Don't Know
☐	☐	☐

4.2. Beliefs, attitudes about health and prevention

40. Do you think it is possible to have received too many vaccines at one time?

Yes	No	Don't Know
☐	☐	☐

41. Do you think MR vaccine overload the immune system?

Yes	No	Don't Know
☐	☐	☐

42. Do you believe that there are other (better) ways to prevent diseases which can be prevented by a vaccine?

Yes	No	Don't Know
☐	☐	☐

43. Do you believe that it is better for the child to start to receive MR vaccine only when over one year of age?

Protocol No. 076.1/62
Date of Approval 27 MAY 2019
Approval Expire Date 26 MAY 2020

Yes ☐ No ☐ Don't Know ☐

4.3. Knowledge/awareness

44. Do you feel that you know which vaccines you should get for your children?

Yes ☐ No ☐ Don't Know ☐

45. Do the mass immunisation campaigns provide you with sufficient information to address your concerns around MR vaccination?

Yes ☐ No ☐ Don't Know ☐

46. Did you ever inform yourself on MR vaccine and then decide against it/delay receiving it?

Yes ☐ No ☐ Don't Know ☐

47. Do you feel you get enough information about MR vaccine and its safety?

Yes ☐ No ☐ Don't Know ☐

48. Would you prefer to receive more information on MR vaccination at your health centre?

Yes ☐ No ☐ Don't Know ☐

49. My health professionals provides me with all the information I need to my questions on MR Vaccine immunisation.

Yes ☐ No ☐ Don't Know ☐

50. Do you consider that MR vaccine is more important than other?

Yes ☐ No ☐ Don't Know ☐

4.4. Health System and Providers-trust and personal experience

51. Information on side effects following immunisation is discussed openly by the authorities

Yes ☐ No ☐ Don't Know ☐

Protocol No. 076.1/62
Date of Approval 27 MAY 2019
Approval Expire Date 26 MAY 2020

52. Have you ever felt healthcare professional, government, local authorities are pushing you into a MR vaccination decision you did not fully support?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

53. Does having the same provider give all the infant vaccines make you more likely to accept MR vaccine than having a different provider each time vaccines are due?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

54. I am able to openly discuss my concerns about MR Vaccine shots with my child's doctor.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

55. I trust the information I receive about MR Vaccine shots.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

56. Do you feel that your healthcare provider cares about what is best for your child?

Not At All Concerned	Not too Concerned	Not Sure	Somewhat Concerned	Very Concerned
☐	☐	☐	☐	☐

4.5. Risk/benefit (perceived, heuristic)

57. How concerned are you that MR Vaccine shot of the childhood might not be safe?

Not At All Concerned	Not too Concerned	Not Sure	Somewhat Concerned	Very Concerned
☐	☐	☐	☐	☐

58. Do you think MR vaccines are still needed even when the disease is no longer prevalent ?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

59. How concerned are you that your child might have a serious side effect from MR Vaccination shot?

Not At All Concerned	Not too Concerned	Not Sure	Somewhat Concerned	Very Concerned
☐	☐	☐	☐	☐

60. How concerned are you that MR Vaccine shot might not prevent the disease?

Not At All	Not too	Not Sure	Somewhat	Very

Concerned Concerned Concerned Concerned

61. Measles, rubella is not common where I live. That's why I decided against the MR vaccine.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

62. Do you believe that MR vaccines are still needed when diseases are rare?

Strongly Agree Agree Not Sure Disagree Strongly Disagree

Section 5. Vaccine/Vaccination

5.1. Risk/Benefit (scientific evidence)

63. Do you believe MR vaccines are safe for your children?

Strongly Agree Agree Not Sure Disagree Strongly Disagree

64. Me or my child never experienced severe adverse reactions following MR Vaccine immunisation.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

65. Before administering MR vaccine, my health care worker (HCW) always provided me with enough information on the side effects that might follow.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

5.2. Mode of administration

66. Do you fear the pain to your child when receiving MR vaccine shot make you hesitate to do MR immunisation?

Strongly Agree Agree Not Sure Disagree Strongly Disagree

67. Has pain following MR vaccine immunisation ever made you reconsider to have your child vaccinated?

Strongly Agree Agree Not Sure Disagree Strongly Disagree

68. Would you be willing to accept more vaccines for your child if there was no pain involved?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

69. Do you trust your Health Care Worker to safely administer the MR vaccine to your child?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

5.3. Design of vaccination program/Mode of delivery

70. Is the MR vaccination process welcoming?

Yes	No	Don't Know
☐	☐	☐

71. Do you want medical consultation on MR Vaccination ?

Yes	No	Don't Know
☐	☐	☐

72. What would you prefer for your child:

Health center/ Doctor	Door-to-door Vaccination	Mass Vaccination	School-based Program
☐	☐	☐	☐

73. Would you let your child get vaccinated within a school-based immunisation program?

Yes	No	Don't Know
☐	☐	☐

74. Did you ever refrain from having your child MR vaccinated during a mass immunisation campaign?

Yes	No	Don't Know
☐	☐	☐

5.4. Vaccination Schedule

75. Is it difficult to get MR vaccines because of the schedule?

Yes	No	Don't Know
☐	☐	☐

76. How sure are you that following the recommended MR Vaccine shot schedule is a good idea for your child?

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

77. Children get more shots than are good for them.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

78. It is better for children to get fewer vaccines at the same time

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
☐	☐	☐	☐	☐

5.5. Role of healthcare professionals

79. Did healthcare professionals ever treat you without respect (e.g. in regard to your appearance, education or cultural background) that you will hesitate to return to the healthcare facility?

Yes	No	Don't Know
☐	☐	☐

80. Did you choose your doctors/health care providers based on their willingness to alter or delay the MR vaccination schedule according to your requests?

Yes	No	Don't Know
☐	☐	☐

81. Has your healthcare provider ever advised you that MR vaccine was not necessary or had too many side effects?

Yes	No	Don't Know
☐	☐	☐

82. Was your doctor ever reluctant to administer MR Vaccine you wanted for your child?

Yes	No	Don't Know
☐	☐	☐

Appendix B : Questionnaire in Bahasa Indonesia

"KERAGUAN ORANG TUA TERHADAP VAKSIN CAMPAK RUBELLA (MR) TERHADAP STATUS VAKSINASI ANAK MEREKA DI DAERAH PERKOTAAN DI INDONESIA"

Kelurahan tempat tinggal : ……
Tanggal : ……

1. Apakah anak yang tersebut adalah anak pertama/sulung?
   ☐ Ya ☐ Tidak

2. Apa hubungan anda dengan anak tersebut?
   ☐ Ibu ☐ Ayah ☐ Lainnya, _____

3. Berapa umur anda? _____ tahun

4. Apa status pernikahan anda saat ini ?
   ☐ Belum menikah
   ☐ Menikah
   ☐ Cerai mati
   ☐ Berpisah
   ☐ Cerai hidup

5. Status pendidikan anda ?
   ☐ SMP atau Tidak lulus SMP atau sederajat
   ☐ Tidak lulus SMA/SMK atau sederajat
   ☐ Lulus SMA atau sederajat
   ☐ Sarjana S1
   ☐ Pasca sarjana atau lebih tinggi

6. Penghasilan per-bulan rumah tangga anda?
   ☐ Kurang dari sama dengan Rp. 3.000.000
   ☐ Rp. 3.000.001 - 5.000000
   ☐ Rp. 5.000.001- 7.500.000
   ☐ Lebih dari Rp. 7.500.001

7. Berapa banyak anak-anak usia kurang dari 9 tahun di rumah anda ?

☐ Satu
☐ Dua
☐ Tiga
☐ Empat atau lebih

8. Latar belakang suku anda ?

☐ Bugis ☐ Makassar
☐ Toraja ☐ Mandar
☐ Lainnya, silahkan diisi _____

9. Jika anak usia 1-9 tahun di rumah anda lebih dari 1 anak, berapa usia anak tertua ? _____ tahun.

9.1. Jika hanya 1 anak usia 1-9 tahun, berapa usianya? _____ tahun

10. Apakah anak anda mendapatkan vaksin campak-rubella ?

Ya (lanjut ke no. 10.1) Tidak (lanjut ke no. 11) Tidak tahu (lanjut ke no. 11)

☐ ☐ ☐

10.1. Berapa banyak dosis campak-rubella yang anak anda dapatkan?

☐ 1 Dosis ☐ 2 Dosis ☐ Lebih dari 2 Dosis

11. (Berdasarkan buku imunisasi) Berapa umur anak anda ketika melakukan imunisasi campak ? (Anda diperbolehkan menjawab lebih dari 1 pilihan)

☐ Sebelum 12 bulan
☐ 12-15 bulan
☐ 1.4 tahun (16 bulan) - 3 tahun
☐ 4 - 6 Tahun
☐ Lebih dari 6 tahun

12. Siapa yang anda paling percaya mengenai Vaksin Campak ?

☐ Dokter/Perawat/Bidan ☐ Pemuka agama
☐ Pemerintah ☐ Selebriti
☐ Lainnya, silahkan diisi : _____

13. Apakah berita yang anda baca/dengar melalui media massa atau media sosial membuat anda mempertimbangkan kembali dalam memberikan Vaksin Campak pada anak anda ?

☐ Ya (Silahkan lanjut ke no. 13.1)

☐ Tidak (lanjut ke nomor 14)
☐ Tidak Tahu (lanjut ke nomor 14)

13.1. Apakah anda membagikan informasi terkait vaksin Campak melalui akun sosial media anda ?

☐ Ya (Silahkan lanjut ke no. 13.2)
☐ Tidak (lanjut ke nomor 14)
☐ Tidak Tahu (lanjut ke nomor 14)

13.2. Apakah anda mengingat Vaksin Campak yang manfaatnya diperdebatkan di media ?

☐ Ya (Silahkan lanjut ke no. 13.3)
☐ Tidak (lanjut ke nomor 14)
☐ Tidak Tahu (lanjut ke nomor 14)

13.3. Apakah anda percaya dengan berita di media mengenai Vaksin Campak yang dapat merenggut nyawa seorang anak?

☐ Ya ☐ Tidak ☐ Tidak Tahu (lanjut ke nomor 14)

14. Apakah anda setuju pada kelompok atau pemimpin yang tidak setuju dengan pemberian imunisasi campak ?

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

15. Apakah pemimpin (agama, politik, guru, pekerja kesehatan) di komunitas anda mendukung imunisasi Campak untuk bayi dan anak?

Ya	Tidak	Tidak tahu
☐	☐	☐

16. Ketika selebriti menentang pemberian Vaksin Campak, apakah hal tersebut menimbulkan keraguan anda untuk memberikan imunisasi Campak pada anak anda ?

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

17. Apakah pemuka agama anda pernah menentang pemberian imunisasi Campak?

☐ Ya (Silahkan lanjut ke no. 17.1)
☐ Tidak (lanjut ke nomor 18)
☐ Tidak Tahu (lanjut ke nomor 18)

17.1. Apakah anda menurutinya?

Ya ☐ Tidak ☐ Tidak Tahu ☐

18. Apakah anda mengingat peristiwa pada masa lalu mengenai imunisasi Campak sehingga membuat anda mengurungkan niat untuk memberikan Vaksin Campak pada anak anda?

Ya ☐ Tidak ☐ Tidak Tahu ☐

19. Apakah komunitas anda merasa perlu untuk memperkenalkan vaksin jenis baru ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

20. Apakah komunitas anda pernah menolak program pemberian Vaksin Campak ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

21. Apakah anda mengenal seseorang yang tidak melakukan vaksinasi Campak karena alasan agama atau budaya ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

22. Apakah agama/budaya anda tidak menyetujui pemberian imunisasi Campak?

Ya ☐ Tidak ☐ Tidak Tahu ☐

23. Apakah anda menolak imunisasi Campak karena tidak halal ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

24. Apakah anda menolak pemberian Vaksin Campak karena yang memberikan vaksin berbeda agama/latar belakang etnis dengan anda ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

25. Saya percaya bahwa program pemerintah mengenai pemberian vaksinasi Campak adalah program yang baik untuk anak saya.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

26. Apakah anda pernah tidak setuju dengan jenis vaksin Campak yang disediakan oleh pemerintah ?

- ☐ Sangat setuju
- ☐ Setuju
- ☐ Tidak yakin
- ☐ Tidak setuju
- ☐ Sangat tidak setuju

27. Saya yakin bahwa pemerintah menyediakan jenis vaksin Campak dengan kualitas terbaik.

- ☐ Sangat setuju
- ☐ Setuju
- ☐ Tidak yakin
- ☐ Tidak setuju
- ☐ Sangat tidak setuju

28. Pernahkan anda merasa kalau kualitas Vaksin Campak yang disediakan pemerintah adalah kualitas rendah?

Ya	Tidak	Tidak Tahu
☐	☐	☐

29. Satu-satunya alasan mengapa saya memberikan Vaksin Campak pada anak saya adalah agar dia bisa diterima masuk sekolah.

- ☐ Sangat setuju
- ☐ Setuju
- ☐ Tidak yakin
- ☐ Tidak setuju
- ☐ Sangat tidak setuju

30. Apakah sekolah/TPA anak anda mengharuskan/menyarankan agar anak anda diberikan Vaksin Campak ?

Ya	Tidak	Tidak Tahu
☐	☐	☐

31. Apakah waktu antri yang panjang di klinik membuat anda tidak memberikan Vaksin Campak pada anak anda ?

Ya	Tidak	Tidak Tahu
☐	☐	☐

32. Batas waktu maksimal anda untuk menunggu untuk mendapatkan Vaksin Campak bagi anak anda ?

- ☐ Kurang dari 30 menit
- ☐ 30 menit - 1 jam

☐ 1 - 1.5 jam
☐ 1.5 - 2 jam
☐ Lebih dari 2 jam

33. Vaksin Campak sangat penting dan tidak masalah jika harus menunggu lebih dari 1 jam.

Ya	Tidak	Tidak Tahu
☐	☐	☐

34. Anak-anak tahan terhadap cara pemberian Vaksinasi Campak

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

35. Apakah anda atau seseorang yang anda kenal pernah mengalami reaksi buruk setelah mendapatkan Vaksin Campak, sehingga anda mempertimbangkan untuk pemberian vaksinasi tersebut ?

Ya	Tidak	Tidak Tahu
☐	☐	☐

36. Apakah anda mengetahui anak yang sakit parah karena tidak mendapatkan Vaksin Campak ?

Ya	Tidak	Tidak Tahu
☐	☐	☐

37. Apakah anda tahu anak yang mengalami alergi parah setelah diberikan Vaksin Campak ?

Ya	Tidak	Tidak Tahu
☐	☐	☐

38. Apakah anda pernah mendengar anak yang cacat setelah diberikan Vaksin Campak?

Ya	Tidak	Tidak Tahu
☐	☐	☐

39. Apakah pengalaman rasa sakit karena suntik Vaksin Campak sehingga membuat anda tidak memberikan Vaksin Campak pada anak anda?

Ya	Tidak	Tidak Tahu
☐	☐	☐

40. Tidak apa-apa mendapatkan beberapa imunisasi dalam waktu yang bersamaan

Ya ☐ Tidak ☐ Tidak Tahu ☐

41. Vaksin Campak membuat sistem kekebalan tubuh berlebihan

Ya ☐ Tidak ☐ Tidak Tahu ☐

42. Apakah anda percaya ada cara lain yang lebih baik untuk mencegah penyakit selain memberikan Vaksin Campak ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

43. Saya percaya lebih baik bagi anak saya jika mendapatkan Vaksin Campak ketika berusia lebih dari 1 tahun.

Ya ☐ Tidak ☐ Tidak Tahu ☐

44. Apakah anda tahu vaksin apa saja yang baik bagi anak anda ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

45. Apakah kampanye imunisasi Campak secara massal telah cukup untuk memberikan semua informasi mengenai vaksin tersebut ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

46. Apakah anda pernah menentang atau dengan sengaja menunda memberikan Vaksin Campak pada anak anda ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

47. Apakah anda merasa telah mendapatkan informasi yang cukup mengenai Vaksin Campak dan tingkat keamanannya ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

48. Saya lebih memilih mendapatkan Vaksin Campak di puskesmas.

Ya ☐ Tidak ☐ Tidak Tahu ☐

49. Petugas kesehatan memberikan informasi yang saya butuhkan mengenai imunisasi Campak.

Ya Tidak Tidak Tahu

☐ ☐ ☐

50. Sepertinya imunisasi campak lebih baik dibandingkan imunisasi yang lain.

Ya	Tidak	Tidak Tahu
☐	☐	☐

51. Pemerintah mendiskusikan mengenai efek samping setelah imunisasi Campak

- Sangat setuju ☐
- Setuju ☐
- Tidak yakin ☐
- Tidak setuju ☐
- Sangat tidak setuju ☐

52. Petugas kesehatan, pemerintah, pemerintah lokal memaksa pemberian Vaksin Campak, padahal saya tidak setuju dengan vaksin tersebut.

- Sangat setuju ☐
- Setuju ☐
- Tidak yakin ☐
- Tidak setuju ☐
- Sangat tidak setuju ☐

53. Saya lebih memilih petugas kesehatan yang sama setiap kali memberikan vaksin pada anak saya. Termasuk Vaksin Campak.

- Sangat setuju ☐
- Setuju ☐
- Tidak yakin ☐
- Tidak setuju ☐
- Sangat tidak setuju ☐

54. Dokter/petugas kesehatan saya sangat terbuka dalam mendiskusikan Vaksin Campak.

- Sangat setuju ☐
- Setuju ☐
- Tidak yakin ☐
- Tidak setuju ☐
- Sangat tidak setuju ☐

55. Saya percaya informasi yang diberikan pada saya mengenai Vaksin Campak

- Sangat setuju ☐
- Setuju ☐
- Tidak yakin ☐
- Tidak setuju ☐
- Sangat tidak setuju ☐

56. Saya merasa kalau petugas kesehatan sangat perhatian akan kesehatan anak saya.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

57. Seberapa khawatir anda mengenai tingkat keamanan Vaksin Campak bagi anak anda ?

☐ Tidak khawatir sama sekali
☐ Tidak terlalu khawatir
☐ Tidak yakin
☐ Agak khawatir
☐ Sangat khawatir

58. Imunisasi Campak masih diperlukan bahkan ketika penyakit Campak bukan lagi hal yang umum ditemukan.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

59. Seberapa khawatir anda mengenai efek samping setelah mendapatkan suntikan Vaksin Campak ?

☐ Tidak khawatir sama sekali
☐ Tidak terlalu khawatir
☐ Tidak yakin
☐ Agak khawatir
☐ Sangat khawatir

60. Seberapa khawatir anda mengenai kemungkinan Vaksin Campak tidak dapat mencegah penyakit campak ?

☐ Tidak khawatir sama sekali
☐ Tidak terlalu khawatir
☐ Tidak yakin
☐ Agak khawatir
☐ Sangat khawatir

61. Campak dan Campak Jerman (Rubella) bukan hal yang umum di tempat saya tinggal. Makanya saya tidak memberikan imunisasi campak pada anak saya.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐

Tidak setuju ☐
Sangat tidak setuju ☐

62. Saya percaya Vaksin Campak masih diperlukan walaupun penyakit tersebut jarang terjadi.
Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

63. Saya percaya Vaksin Campak aman bagi anak saya.
Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

64. Anak saya mengalami reaksi alergi parah setelah disuntikkan Vaksin Campak
Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

65. Sebelum menyuntikkan Vaksin Campak, petugas kesehatan selalu menjelaskan secara lengkap tentang efek samping yang kemungkinan dapat terjadi

Sangat setuju	Setuju	Tidak yakin	Tidak setuju	Sangat tidak setuju
☐	☐	☐	☐	☐

66. Saya takut anak saya kesakitan jika disuntik Vaksin Campak, oleh karena itu saya ragu membawa anak saya untuk Vaksinasi Campak.
Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

67. Apakah rasa sakit setelah imunisasi Campak membuat anda berpikir panjang untuk membawa anak anda untuk mendapatkan imunisasi Campak ?
Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

68. Saya akan lebih menerima jika imunisasi untuk anak saya tidak menimbulkan rasa sakit.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

69. Saya percaya petugas kesehatan dapat menyuntikkan imunisasi Campak dengan aman bagi anak saya.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

70. Apakah proses Imunisasi Campak dapat diterima dengan baik?

Ya ☐ Tidak ☐ Tidak tahu ☐

71. Apakah anda menginginkan imunisasi Campak & konsultasi medis ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

72. Untuk imunisasi Campak, saya lebih memilih :

☐ Pusat kesehatan/Dokter
☐ Imunisasi pintu-ke-pintu
☐ Imunisasi massal
☐ Imunisasi berdasarkan program sekolah anak

73. Saya mengizinkan anak saya mendapatkan imunisasi Campak sesuai dengan program imunisasi di sekolahnya.

Ya ☐ Tidak ☐ Tidak Tahu ☐

74. Apakah anda pernah tidak ikut serta dalam program imunisasi Campak secara massal ?

Ya ☐ Tidak ☐ Tidak Tahu ☐

75. Jadwal imunisasi Campak sulit untuk saya ikuti.

Ya ☐ Tidak ☐ Tidak Tahu ☐

76. Saya yakin dengan mengikuti jadwal imunisasi Campak yang sudah ada, itu baik bagi anak saya.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

77. Imunisasi dengan jenis yang beragam baik buat mereka .

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

78. Baik buat anak-anak untuk diberikan beberapa imunisasi dalam jangka waktu yang bersamaan.

Sangat setuju ☐
Setuju ☐
Tidak yakin ☐
Tidak setuju ☐
Sangat tidak setuju ☐

79. Petugas kesehatan pernah memperlakukan saya dengan tidak hormat (misalnya, dengan melihat penampilan saya, tingkat pendidikan atau latar belakang budaya) sehingga saya ragu kembali kesana untuk mendapatkan imunisasi .

Ya ☐ Tidak ☐ Tidak Tahu ☐

80. Apakah anda memilih petugas kesehatan atas keinginan mereka untuk menunda jadwal imunisasi berdasarkan permintaan anda?

Ya ☐ Tidak ☐ Tidak Tahu ☐

81. Petugas kesehatan pernah mengatakan pada saya bahwa imunisasi Campak adalah hal yang tidak perlu atau punya banyak efek samping.

Ya ☐ Tidak ☐ Tidak Tahu ☐

82. Dokter/petugas kesehatan pernah menolak untuk memberikan imunisasi Campak pada anak saya.

Ya ☐ Tidak ☐ Tidak Tahu ☐

Appendix C: Administration and Time Schedule

Administration and time schedule

No.	Administration	Timeline										
		2018				2019						
		9	10	11	12	1	2	3	4	5	6	7
1	Preparation and time schedule											
2	Proposal development											
3	Questionnaire development, including validity and reliability											
4	Ethical consideration											
5	Prepare and Data Collection											
6	Data Analysis											
7	Conclude and write report											

Appendix D: Budget Estimation

Budget allocation

No.	Description	Estimated expenses (Baht)
1	Stationary	500
2	Printing paper for publication	10000
3	Transportation	6000
4	Ink for printer	1000
5	Miscellanous	3000
	Total	20500

VITA

NAME	Ardyansyah Arthin
DATE OF BIRTH	29 November 1982
PLACE OF BIRTH	Ujung Pandang, Makassar, Indonesia
INSTITUTIONS ATTENDED	Master of Public Health Program in Urban and Global Health College of Public Health Science Chulalongkorn University
HOME ADDRESS	Ratchaprarop Tower Mansion. Room 1617. 99 ราชปรารภ 14 Khwaeng Makkasan, Khet Ratchathewi, Krung Thep Maha Nakhon 10400

Aspects and Factors on MR Vaccine Hesitancy Phenomena among Children in Makassar City, Indonesia

Ardyansyah Arthin[1] , Nutta Taneepanichskul[1]

[1]College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

Abstract:

Introduction:

As we speak about vaccine, basic concept that always related to it, is the herd immunity that became the goal of vaccination programs. We have to be able to control many diseases that can be prevented by-vaccine. Percentage of individuals to achieve herd immunity is 30% - 95%, depending on the disease itself.

Vaccine hesitancy has become phenomena that occurred more and more in the last decade. These phenomena are happening all over the world and the causes are different between each region. From the lack of awareness about VPD (Vaccine-preventable Diseases) that can cause the mis-information about the vaccine to the problems that caused by health workers itself. This term is so important because it can lead into completely receiving the vaccine into completely reject from one to all kinds of vaccine. The behind these individuals raged so wide that still need more observation. Health workers are the first line that has important role in order to help parents and caregiver, so they can appreciate the benefits of vaccine; because health worker (especially doctors) has been proven to be the most important predictor for parent's decision to accept the vaccination. This research is particularly on MR Vaccine only.

Objective: to explain the aspects and factors related to MR Vaccine hesitancy among caregiver of children aged 1-9 years old in Makassar City, Indonesia.

Methodology

A descriptive cross-sectional study was conducted in April 2019. The study uses self-administered questionnaire based on WHO's SAGE (Strategic Advisory Group of Experts) Vaccine Hesitancy Matrix and also additional questions from PAVC (Parent Attitudes about Childhood Vaccine) Survey. The questionnaire was distributed via online questionnaire and the respondents are Parents/Caregiver that has children aged 1-9 years old and living in Makassar City. Makassar city itself has 14 sub-districts. There are 283 respondents that filled the questionnaire. Descriptive analysis was performed. Number and percentage were reported in this study.

Result

From the variable that related to the vaccine hesitancy itself, 65 (23%) out of 215 (76 %) said that they even refused the vaccine because it included porcine or non-halal ingredient. The other is 51 (18%) participants said that leaders (religious, political, teachers, health care workers) in their community did not support MR Vaccination program. Another is that 61 (21.6%) out of 216 (76.3 %) said they against/delay in get MR vaccination to their children after they went informed themselves. There are also 33 (11.6 %) of respondents agree that it'll raise hesitancy on vaccine if celebrity advocates to against MR vaccine. On their knowledge of MR Vaccine, 75 (26.5 %) said that their health care professional did not provide them with all the information needed regarding MR Vaccination. From the design of vaccination program, 101 (35 %) respondents said that they refrain their children for having MR Vaccination during immunization campaign.

Conclusion

Based on the self-administered questionnaire that has been answered by the participants, mostly participants able to answer most of the question that suits them in term of MR Vaccination. In this questionnaire, participants are allowed not no answer question if it makes

them uncomfortable or any personal reasons. Vaccine hesitancy is something that can be found anywhere. It's a complex situation because there is no similarity in each region.

Keywords: *vaccine hesitancy, MR Vaccine, measles, rubella, Indonesia, children*

Correspondents: *Ardyansyah Arthin, College of Public Health Sciences Chulalongkorn University Thailand, Tlp. 0970050042, e-mail: ardyarthin@yahoo.com*

Introduction

When speaking about vaccine, the goal is to create immunity on the community level to prevent and eliminate diseases. The highest rate of vaccination, the better. However, even in a country that has high vaccination uptake, there are always some gap which created by people who questioning the benefit of vaccination itself. Which these kinds of group in the end can contribute in lowering coverage of vaccination. This is something that we need to look after. The numbers of people who hesitant doing vaccination is increasing each years. Although it's been said that vaccination has been one of the most successful and cost-effective inventions in order to improve health outcome (1).

WHO's SAGE (Strategic Advisory Group of Experts) in vaccine has come out on definition this term that : ***Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccine services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence*** (2).

Immunizations program has become one of the hugest achievements in the field of public health for the last 100 years. However, for the last 20 years or so, the few groups of people has emerged and begin to questioned the "true" benefit of vaccine, how it can be benefit of the children's health in the future, long after they got the vaccine (1).

The other factors that make this Vaccine Hesitancy is something that we have to look very carefully is because the range is so wide. From fully except it but not sure to completely refuse to one typical vaccine or all the vaccine (3-5).

Because of this vaccine hesitancy is so wide, it needs many knowledges about the specific problems that causing it. One if the most important is to identify the basic cause of this

vaccine hesitancy. Also because the cause of this phenomena is different for each region, it need close monitoring since it has so many determinants (6).

Indonesia, as the fourth largest population in the world also facing the vaccine hesitancy problems. Especially on the MR Vaccine, one of the factors that people concern is that the ingredients of the vaccine itself that people consider it is not halal.

Through surveillance, it is reported that more than 11,000 cases of suspected measles are happening in Indonesia, and after laboratory test, it was said that 12-39 % of those cases are measles, and 16-43 % are rubella. The number of these cases are still not the real number that currently happen in the field. Many of these cases are not reported to the local authorities. Specially those who went and got treatment at the private health center. Another challenge why these cases are not reported is that specially when the cases is happen in small and remote place. Where laboratory tests are limited or even there are no laboratory testing and also there is no adequate surveillance tools available (7). Makassar city right now is the 5th of the most populated city in Indonesia. This study aimed to explain the aspects and factors related to MR Vaccine hesitancy among caregivers of children aged 1-9 years old in Makassar City, Indonesia.

Methodology

This research study is a descriptive cross-sectional, which conducted in the Makassar City on March 2019. Online questionnaire was distributed via online platforms. Snowball sampling technique was performed to select the participants. The questionnaire was modified from Vaccine Hesitancy Survey Questions related to SAGE Vaccine Hesitancy Matrix.

There were 283 respondents were participated in this study. Data are analyzed by SPSS program version 22 (Chulalongkorn university license) by descriptive statistic. Frequency and percentage were reported. This study was approved by Chulalongkorn University Research Ethics Committee.

Result

Table 1 presents general characteristic of respondents in this study. Most of the respondents were child's mother (78.1%). From the marital status, most of them were married (96.5%), also most of their educational background were more than 4 years degree college degree (88.3%). From the ethnical background, most of them are Buginese (59.7 %) and most of the

Table.1. General Characteristic of respondents

Characteristic	N (%)
Relationship with the child	
Mother	221 (78.1)
Father	54 (19.1)
Other	8 (2.8)
Age respondents	
Less than 30	42 (14.8)
≥ 30	241 (85.2)
Marital Status	
Single	4 (1.4)
Widowed	4 (1.4)
Divorce	2 (.7)
Married	273 (96.5)
Educational level	
8th Grade or less	0 (0)
Some high school but not graduate	2 (.7)
High school graduate	16 (5.7.)
Some college or 2-to-4 years of college degree	15 (5.3)
More than 4 years college degree	250 (88.3)
Household income	
Rp. 3.000.000 or less	23 (8.1)
Rp. 3.000.001 - Rp. 5.000.000	84 (29.7)
Rp. 5.000.001 - Rp. 7.500.000	64 (22.6)
Rp. 7.500.001 or more	108 (38.2)
How many children aged 1-9 years old in your household right now?	
One	129 (45.6)
Two	126 (44.5)
Three	27 (9.5)
Four or more	1 (.4)
Ethnical background	
Makassar	54 (19.1)
Bugis	169 (59.7)
Toraja	23 (8.1)
Mandar	8 (2.8)

Other	29 (10.2)

From table 2, there were 65 (23 %) of the respondents that said that they refused to give their child MR vaccination because they think that it's not halal, and the other 215 (76 %) prefer to give their child MR Vaccine. Leaders (political, religious, teachers, health care workers) also have important role in order to increase the level of acceptance of vaccine. From our result, mostly 81.3 % of those respondents said that their leaders are support MR vaccination and the 18 % of them do not support in MR Vaccination. One of interesting thing that we found on this research is that, there were 61 or 21.6 % of respondents went to search regarding MR vaccination before taking their child to get vaccination and after they get the information, they decided not to give their child MR vaccine. The fourth is that 101 (35.7%) of these parents/care givers refrain their children in the time of immunization program. The last one is that 76 (26.9 %) of these respondents were not sure if celebrity advocate against MR Vaccination, although 170 (60 %) of them are disagree with this celebrity, but still 33 (11.6 %) of them totally agree with this celebrity.

Table 2. Description Vaccine Hesitancy in Makassar

Have you ever refused a vaccine as you considered it to include porcine or other animal derived ingredients (non-halal)?	
Yes	65 (23%)
No	215 (76 %)
Do leaders (religious, political, teachers, health care workers) in your community support MR vaccines for infants and children?	
Yes	230 (81.3 %)
No	51 (18 %)
Did you ever inform yourself on MR vaccine and then decide against it/delay receiving it?	
Yes	61 (21.6 %)
No	216 (76,3 %)
Did you ever refrain from having your child MR vaccinated during a mass immunization campaign?	
Yes	101 (35.7 %)
No	170 (60.1 %)
Would it trigger doubts to have your child vaccinated, if a celebrity advocates against MR vaccine?	

Strongly agree	8 (2.8 %)
Agree	25 (8.8 %)
Not sure	76 (26.9 %)
Disagree	132 (46.6 %)
Strongly disagree	38 (13.4 %)

Discussion

Religion and beliefs has a long history as one factor regarding either vaccine hesitancy or anti vaccine movements itself. Some of this religious groups will use form of doctrines to other regarding their choice to do vaccination. Some of this group not approve only to some type of vaccine because how the those vaccine production, violate their beliefs. Those group of people who oppose rejection comes from selected Muslim communities in Nigeria, Pakistan and Afganistan during poliovirus immunization program. Their main consideration regarding this problem is that the suspicion to this immunization program can spread HIV virus or any problem, such as political power, inadequate health services. At the end, Nigerian government sent religious representatives to South Africa, Indonesia and India to observe the vaccine quality control from its manufacturers directly. However, not just some of Muslim group that questioning this vaccine. These groups include the Roman Catholic, which opposed the rubella 27/3-strain vaccine because the origins is derived from aborted fetus (8).

On one study regarding MMR vaccine hesitancy, parents/caregiver who do now want to give their children vaccination is the one who are the qualified ones (9). Also, in another study that conducted in finding one of the reasons why they feel hesitant about vaccination is that these parents/care givers can not match their schedule with vaccination time that's already been set (10). These two researches make strong points onto those parents who hesitant about it. It is because the inclusion criteria not the same when it comes to attitudes and perception. This why what makes vaccine hesitancy so complicated because different place, different causes (11, 12).

Many parents also still think that breastfeeding to certain time of period can prevent diseases. This is included diseases that can be prevented by vaccination. Also, they think that those diseases are not serious and believed, that if another child is already vaccinated, then their child will be safe from those illnesses. Another non-medical explanation to this is that religious believed or personal believe (13).

Another important aspect when we discuss about vaccine hesitancy is that how the religious leader have impact on the society. There was a study that measured the level of vaccine confidence in 67 countries, it is said, in European countries, Roman Catholics leaders tend to support vaccination (14).

Conclusion

Before the participants get involved in this study, we gave a brief explanation to the future respondents about this research. Beside they have to answer to mandatory questions that we mention before, we also mention that they can skip or chose not answer question that makes them uncomfortable or if there's any other personal reason behind it. Based on the result that we found at the end of the research, Vaccine hesitancy phenomena is also happening in Indonesia with the different cause with other country. This is the pilot project regarding vaccine hesitancy in Indonesia. From the result, although there were not many, but still, vaccine hesitancy still happening in Makassar City.

Acknowledgement

This research was supported by CU Graduate School Thesis Grant.

References

1. Larson HJ, Jarrett C, Eckersberger E, Smith DM, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007-2012. Vaccine. 2014;32(19):2150-9.
2. SAGE. Report of The Sage Working Group on Vaccine Hesitancy. Retrieved from https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf. 2015.
3. Dempsey AF, Schaffer S, Singer D, Butchart A, Davis M, Freed GL. Alternative vaccination schedule preferences among parents of young children. Pediatrics. 2011;128(5):848-56.
4. Gust DA, Darling N, Kennedy A, Schwartz B. Parents with doubts about vaccines: which vaccines and reasons why. Pediatrics. 2008;122(4):718-25.
5. Robison SG, Groom H, Young C. Frequency of alternative immunization schedule use in a metropolitan area. Pediatrics. 2012;130(1):32-8.
6. Omer SB, Salmon DA, Orenstein WA, deHart MP, Halsey N. Vaccine Refusal, Mandatory Immunization, and the Risks of Vaccine-Preventable Diseases. 2009;360(19):1981-8.
7. Indonesia U. 2019 [Available from: https://www.unicef.org/indonesia/id/Preview_FA_UNICEF_MR_Paket_Advokasi.REV27Jun18.pdf.
8. Grabenstein JD. What the World's religions teach, applied to vaccines and immune globulins. Vaccine. 2013;31(16):2011-23.
9. Gowda C, Schaffer SE, Kopec K, Markel A, Dempsey AF. Does the relative importance of MMR vaccine concerns differ by degree of parental vaccine hesitancy? Human Vaccines & Immunotherapeutics. 2014;9(2):430-6.
10. Luthy KE, Beckstrand RL, Meyers CJ. Common perceptions of parents requesting personal exemption from vaccination. The Journal of school nursing : the official publication of the National Association of School Nurses. 2013;29(2):95-103.
11. Kane MA. Commentary: public perception and the safety of immunization. Vaccine. 1998;16 Suppl:S73-5.
12. Opel DJ, Mangione-Smith R, Taylor JA, Korfiatis C, Wiese C, Catz S, et al. Development of a survey to identify vaccine-hesitant parents: the parent attitudes about childhood vaccines survey. Hum Vaccin. 2011;7(4):419-25.
13. Bowes J. Measles, misinformation, and risk: personal belief exemptions and the MMR vaccine. J Law Biosci. 2016;3(3):718-25.

14. Larson HJ, Jarrett C, Schulz WS, Chaudhuri M, Zhou Y, Dube E, et al. Measuring vaccine hesitancy: The development of a survey tool. Vaccine. 2015;33(34):4165-75.

The 10th International Graduate Students Conference on Population and Public Health Sciences

Submission Accepted for Publication

Title: Aspects and Factors on MR Vaccine Hesitancy Phenomena among Children in Makassar City, Indonesia

Author(s): Ardyansyah Arthin

Dear Ardyansyah Arthin

Thank you for your paper submission. On conclusion of the blindly review process, we are pleased to inform you that your paper has been accepted for publication in **"The proceeding of the 10th International Graduate Students Conference on Population and Public Health Sciences (10th IGSCPP)"** Chulalongkorn University on July 25, 2019 at International Conference Room Institute Building 3, Bangkok, Thailand

Should you have any questions please do not hesitate to contact us. The proceeding will be published online on the website at http://www.igscpp.org/ during August, 2019.

Best Regards,

Prof. Sathirakorn Pongpanich, PhD
Chairperson of the 10th IGSCPP
Dean
College of Public Health Sciences,
Chulalongkorn University
4,5th Floor, Institute Building 2, Soi Chulalongkorn 62, Phyathai Road, Bangkok 10330, THAILAND
Tel. (66) 22188230 Fax. (66) 22188195 E-mail: kunyanin.igscpp@gmail.com
Website: www.cphs.chula.ac.th

College of Public Health Sciences
Chulalongkorn University, Bangkok, Thailand

Certificate of Achievement

Ardyansyah Arthin

For Poster Presentation

Entitled

Aspects and Factors on MR Vaccine Hesitancy Phenomena among Children in Makassar City, Indonesia

The 10th International Graduate Students Conference on Population and Public Health Sciences (IGSCPP)

July 25, 2019

.....

(Professor Dr. Sathirakorn Pongpanich)

Dean, College of Public Health Sciences, Chulalongkorn University