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Social-Demographic Characteristics of Acceptance of Measles Rubella Immunization In Tongkuno District, Indonesia

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ABSTRACT

Acceptance of immunization is one of the challenges faced by the government in the Rubella Measles immunization program. This study aims to measure the influence of social demography on the acceptance of Measles Rubella immunization in Tongkuno District, Indonesia. The study was conducted in the working area of Tongkuno Health Center, Muna Regency. The research design used was a cross sectional study. The research sample was 299 people who were selected using the proportional stratified random sampling technique. Data were analyzed using chi square test and logistic regression. The results showed the socio-demographic characteristics associated with receipt of Tongkuno District rubella measles immunization were the age of the child (p-value = 0.008), children's education (p-value = 0.002) and age of parents (p-value = 0.015). Child education is the variable most associated with the acceptance of MR immunization with an OR value of 0.155 (95% CI: 0.045 - 0.539). The intensive socialization of MR immunization carried out by the government in all circles makes it easy for people to receive information that is not only influenced by education and the work of parents. counseling needs to be done and periodic outreach to both the community and mothers who have children about the benefits of MR immunization.

Keywords: Socio-demographic characteristics, immunization, measles, rubella, tongkuno, indonesia

INTRODUCTION

Background

Measles and rubella is an infectious disease transmitted through the airways caused by the measles and rubella virus which can affect children and adults[(1-3)]. Public health concerns regarding rubella are a teratogenic effect if this rubella attacks the age of pregnant women in the first trimester[(4)]. Rubella infection that occurs before conception and during early pregnancy can cause abortion, fetal death or congenital rubella syndrome (CSR) in babies born[(5, 6)]. Meanwhile, measles can cause serious complications such as diarrhea, pneumonia (pneumonia), inflammation of the brain (encephalitis), blindness, malnutrition and even death [(6)]. In 2017, there are 110,000 measles deaths worldwide, and most of them are children under 5 years [(7)].

The World Health Organization (WHO) noted that there were 149,621 cases of measles in the world in 2017, and increased to 173,177 cases in 2018 [(8)]. While the cases of rubella in 2017 throughout the world were recorded at 16,149 cases[(8)]. In 2017, measles cases in Indonesia reached 11,389 cases, and rubella cases were 4,349 cases. Southeast Sulawesi is one of the provinces with an increase in measles cases in the last three years[(2)]. In 2016, measles outbreaks occurred with 407 cases, with 100% of cases occurring in Kab. Muna, which in 2016 had not previously seen measles cases[(9)]. In 2017 measles outbreaks were followed by rubella with 315 cases, with 63.8% of cases occurring in Muna regency[(10)]. Surveillance data over the past five years shows that 70% of cases of rubella occur in the age group <15 years. In addition, based on a study of the estimated disease burden of CSR in Indonesia in 2013 it was estimated that there were 2767 cases of CSR, 82 / 100,000 at the age of mothers 15-19 years and 47 / 100,000 at the age of mothers 40-44 years[(6)]. Provision of

MR immunization at the age of 9 months to <15 years with high coverage and evenly expected to form group immunity (herd immunity), so as to reduce the transmission of the virus to adulthood and protect it when entering the productive age[11].

The commitment to achieving elimination of measles and rubella / Congenital Rubella Syndrome by 2020 is carried out by implementing MR vaccine campaigns at the age of 9 months - 15 years in stages, namely Phase I, August - September 2017 throughout Java and Phase II, August - September 2018 in all regions outside Java, targeting immunization 95% evenly at all levels[6]. MR immunization is given in schools as a gathering center for school-age children and health care facilities such as posyandu and health centers for infants and toddlers[6]. However, the achievement of MR Phase II Immunization nationally as of October 31, 2018, only reached 66.92% of the 32 million children who were targeted for immunization[12] which caused the national achievement target of MR immunization to be reduced to 85%[13].

Muna Regency is one of the regions in Southeast Sulawesi that has a low MR Immunization achievement, which only reached 73.8% of the total target of 65,797 children. This figure is lower than the achievement of the national achievement target. The low achievement of Muna Regency is influenced by the existence of health center which have an achievement of less than 85%. Tongkuno Health Center is a health center with the third highest number of targets in Muna Regency. However, the Tongkuno Health Center is one of the very low-achieving, and even ranks second, with 66.8% of the target of 4,407 children. This achievement is very low when compared to several other health center in Muna District which are able to reach above 90% to 100% (Maligano Health Center, Wakobalu Health Center, Wakumoro Health Center, Pasir Putih Health Center, Pasikolaga Health Center, Bone Health Center and Parigi Health Center)[14].

Based on the results of the initial survey at the Tongkuno Health Center, information was obtained that the low achievement of MR immunization in the working area of Tongkuno Health Center was influenced by parents' acceptance of MR immunization. Data on MR immunization coverage of neighboring community health centers that have geographical conditions, access and structure of the same community as Tongkuno Health Center such as the Parigi and Wakumoro Health Centers have MR immunization outcomes of up to 90%. Similarly, the Walengkabola Health Center, which is a fraction of the Tongkuno Health Center, has an achievement of up to 85.3%[14].

Purpose

This study aimed to measure the influence of social demography on the acceptance of Measles-Rubella immunization in Tongkuno District, Indonesia.

METHODS

Study Design and setting

Observational study with Cross-Sectional design was carried out in the working area of Tongkuno Health Center, Muna Regency, Southeast Sulawesi in February - April 2019. The Tongkuno Health Center was 60 KM from the Capital City of Muna Regency, Raha. The working area of Tongkuno Health Center consists of 8 villages, which included 12 kindergartens, 13 elementary schools, 4 junior high schools, and 14 immunization posts.

Population and sample

The population in this study were parents who had children between the ages of 9 months and 15 years in the working area of Tongkuno Health Center totaling 4,014 people based on MR immunization achievement data in 2018. Determination of sample size based on the formulas Stenley, Hosmer (15) with a significance level of 1.96, a degree of accuracy of 5% and variable proportion of 0.7. The study sample consisted of 299 parents who were selected using the stratified proportional random sampling technique, which was divided into 134 parents of posyandu age children, 23 children of kindergarten age, 104 elementary school children and 38 parents of junior high school children. The sample size of each level is based on the proportional population of each level in the total population.

Data collection and variables

Data was collected using structured questionnaires. Data collection officers were given training for 2 days. Questionnaires were given to selected respondent's homes based on the data by the name given by the health centers. Measurement of receipt of rubella measles immunization based on reports on the implementation of immunization for the Tongkuno Health Center. Receipt of rubella measles immunization was divided into 2

categories, namely accepting if the child was immunized against rubella measles based on the health center report, and did not accept if the child was not immunized against rubella pleasure based on the health center report.

Socio-demographic variables measured in this study were the sex of the child, age of the child, education of the child, age of parents, parental education and worked of parents. The age of the child was defined as the age range between the date of birth of the child until the study was conducted. The level of children's education was defined as the level of education received by the child when the study was conducted, which was divided into non-schools, kindergartens, elementary and junior high schools. The age of parents was defined as the age range between the date of birth of the parents until the study was conducted. Parent education was defined as the level of education that has been completed by parents. Parental education was categorized as non-school, elementary school, junior high school, high school, and higher education. Parental work is something parents do to find and earn a living. The occupational was divided into categories of Civil Servants, Private Employees / Government Contracts, Entrepreneurs, Farmers, and Housewives.

The study was conducted based on research permits provided by the Faculty of Public Health number 1429 / UN4.14.1/ PL.00.00 / 2019. Whereas permission to collect data in the working area of the Tongkuno Health Center is based on permits granted by the National Unity and Political Agency of Muna Regency number 070/21 in 2019.

Data analysis

Data was checked for conformity and completeness and coded and entered in the Microsoft Excel and SPSS Version 20. Analysis of the description was done to see the frequency distribution of respondents' characteristics. Bivariate and multivariate analysis was performed to see the relationship of each independent variable to the dependent variable. Odd ratio to measured the relationship between independent and dependent variables with 95% confidence intervals. Only socio-demographic variables that had a p-value <0.25 were included in the multivariate regression logistic model. The final model obtained was tested with Hosmer and Lemeshow test.

RESULTS

Characteristics of Respondents

Table 1. Description of the socio-demographic characteristics of the respondents

Variable	Category	(n = 299)	%
Immunization acceptance status	Received Immunization	200	66.9
	Not Received Immunization	99	33.1
Child Gender	Male	164	54.8
	Female	135	45.2
Child Age Group (years)	< 1 – 3	96	32.1
	4 – 7	92	30.8
	8 – 11	66	22.1
	12 – 15	45	15.1
Children's education	Not yet school	134	44.8
	Kindergarten	23	7.7
	Primary school	104	34.8
	Junior high school	38	12.7
Age of parents (years)	18 – 21	3	1.0
	22 – 25	33	11.0
	26 – 29	51	17.1
	30 – 33	50	16.7
	34 – 37	60	20.1
	38 – 41	41	13.7
	42 – 45	29	9.7
	46 – 49	18	6.0
	50 – 53	9	3.0
	54 – 57	5	1.7
Parent education	No school	10	3.3
	Primary school	28	9.4
	Junior high school	69	23.1
	Senior High School	118	39.5
	Higher education	74	24.7
Occupational	Civil Servants	32	10.7
	Private Employee / Government Contract	27	9.0
	Entrepreneur	21	7.0
	Farmer	15	5.0
	Housewife	204	68.2

Based on table 1, a total of 299 respondents collected data in this study, which consisted of 200 parents (66.9%) whose children received MR immunization and 99 parents (33.1%) who did not receive MR immunization. Based on the age of the child, the parents who were the most respondents were those who had children aged <1-3 years, 96 (32.1%), and the least were in the group of children aged 12-15 years, 45 (15.1%).) Based on children's education, the largest is parents who have children who have not been as many as 134 (44.8%). The age group of parents aged 34-37 years is the respondents with the largest number, 60 (20.1%), and the least are the age groups 54-57 years, 5 (1.7%). Based on the education level of parents, parents with high school education were the largest, 118 (39.5%), while based on the work of respondents, the majority were housewives, 204 (68.2%).

Socio-demographic Factors and Acceptance of MR Immunization

Table 2. Socio-demographic factors and acceptance of MR immunization

Variabel sosio demografi	Acceptance of MR Immunization				P-value
	Not Received (99)		Received (200)		
	n	%	n	%	
Child Gender					
Male	48	29.3	116	70.7	0.152
Female	51	37.8	84	62.2	
Child Age Group (years)					
< 1 – 3	32	33.3	64	66.7	0.008
4 – 7	44	47.8	48	52.2	
8 – 11	18	27.3	48	72.7	
12 – 15	5	11.1	40	88.9	
Children's education					
Not yet school	47	35.1	87	64.9	0.002
kindergarten	12	52.2	11	47.8	
Primary school	37	35.6	67	64.4	
Junior high school	3	7.9	35	92.1	
Age of parents (years)					
18 – 21	1	33.3	2	66.7	0.015
22 – 25	17	51.5	16	48.5	
26 – 29	15	29.4	36	70.6	
30 – 33	20	40.0	30	60.0	
34 – 37	19	31.7	41	68.3	
38 – 41	10	24.4	31	75.6	
42 – 45	12	41.4	17	58.6	
46 – 49	4	11.1	14	77.8	
50 – 53	1	12.1	8	88.9	
54 – 57	0	0.0	5	100	
Parent education					
No school	3	30.0	7	70.0	0.459
Primary school	10	35.7	18	64.3	
Junior high school	29	42.0	40	58.0	
Senior High School	35	29.7	83	70.3	
Higher education	22	29.7	52	70.3	
Occupational					
Civil Servants	8	25.0	24	75.0	0.309
Private Employee / Government Contract	6	22.2	21	77.8	
Entrepreneur	7	33.3	14	66.7	
Farmer	3	20.0	12	80.0	
Housewife	75	36.8	129	63.2	

Table 2 shows that boys who received MR immunization were 116 (70.7% and those who did not receive 48 (29.3%). In girls, 84 (62.2%) received immunizations, and 51 (37.8%) did not receive immunization. Children aged <1 - 3 years were the age group most receiving MR immunization, 64 (66.7%) and children aged 12-15 years were the group that received the least amount of MR immunization 5 (11.1%). In the age group of 4 - 7 years, the number of children who received immunization and did not receive immunization was almost the same, namely 44 (47.8%) and 48 (52,%). Children not in school were a group of children the largest received and did not receive immunizations compared to other groups of children. In kindergartens, children who did not receive an immunization (52.2%) were more compared to children who received immunizations (47.8%).

Table 2 also shows that for parents aged 22-25 years, the number of children who were not immunized was higher than those for immunized children, namely 17 (51.5%) and 16 (48.5%). All children from parents aged 54-57 years received MR immunization (100%). At all levels of parental education, the number of children receiving immunizations is greater than those who did not receive MR immunization. The highest percentage of children who received MR immunization was in the group of parents with high school and tertiary education, which were 70.3% respectively. While the lowest percentage of children who did not receive MR immunization was in the group of parents who had junior high school education (42%). Based on the work of the respondents, parents with the profession of farmers are parents with the highest percentage of children who receive MR immunization (80.0%) and the lowest is respondents who work as housewives (63.2%).

Table 3. Logistic regression analysis of the Forward Wald regression method

No	Variable	B	p-value	OR (95% CI)
1	Children's education	-1.863	0.003	0.155 (0.045 – 0.539)
Nagelkerke R^2 = 0.081				
Hosmer and Lemeshow Test for Goodness of fit: the value of p Chi-Square = 0.100 which means the data can explain the model.				

The results of bivariate statistical analysis based on the significance level of p <0.05 indicate the socio-demographic variables associated with the acceptance of MR immunization are the age of the child (p-value = 0.008), education of children (p-value = 0.002) and age of parents (value p = 0.015) (table 2). While the type of education of children (p-value = 0.152), education of parents (p-value = 0.459) and work of parents (p-value = 0.309) are not related to acceptance of MR immunization (p-value> 0.05) (table 2). The socio-demographic variables included in the multivariate analysis were the sex of the child, the age of the child, the education of the child and the age of the parents who had a p-value <0.25 in the bivariate analysis. Logistic regression analysis with the Forward Wald method to see the variables that most influence the acceptance of MR immunization. The results of logistic regression analysis showed that the most influential socio-demographic variables were the education of children with odd ratios of 0.155 (95% CI: 0.045 - 0.539) (table 3).

DISCUSSION

The results showed that based on the characteristics of the child, the age of the child and education of the child had a significant relationship with the acceptance of MR immunization in the working area of the Tongkuno health center. While the sex of the child is not significantly associated with the acceptance of MR immunization. The MR immunization program is very concerned about the participation of school children. The results showed that the age of 12-15 years was the group with the highest percentage of acceptance compared to other age groups of children. This can be caused by children at that age being children with the age of elementary and junior high school education. The results of this study also showed the percentage of children who did not receive immunization at 4-7 years of age reached 47.8%. Children at this age are at the kindergarten level. It can be seen that the percentage of children who did not receive MR child immunization in the kindergarten group was greater than those who received MR immunization. The results of the regression analysis show that children's education is the most influential factor in the acceptance of MR immunization. The implementation of vaccination in schools is one of the driving factors for students receiving immunization, especially vaccination is provided free of charge and is a school policy[16].

Most of the parents were high school graduates (39.5%), and were followed by highly educated parents who reached 24.7%. 70.3% of parents who have high school education and higher education receive MR immunization for their children. This number is greater than other parent groups. However, statistically there is no relationship between parental education and acceptance of MR immunization. This can be caused because

information about the provision of MR immunization can be obtained by all people, not just parents who have high education. Knowledge and information about MR immunization is very intensively socialized by the government both through print and electronic media, and directly delivered by health workers. A person's knowledge is not only influenced by the level of education, because knowledge and information are not only obtained from school but more are obtained from life experiences and information obtained from around. Research conducted by Hagemann, Streng [17] found that the recommendations of health workers to receive immunization were the main factors driving the acceptance of immunization (OR 34.7).

The respondents in this study were mostly 34-37 years old (20.1%). The highest acceptance rate for MR immunization occurs in parents aged 54-57 years (100%), while the lowest is parents aged 22-25 years (48.5), wherein parents who do not receive immunization at the age of 22 - 25 years greater than those who received immunization. This can be caused by parents aged 22-25 years having children who are still toddlers. Concern about side effects can prevent parents from giving MR immunization to their children. Fournet, Mollema[18] concluded that there were various health beliefs and objections from parents regarding the administration of vaccines. The factor that encourages parents not to vaccinate their children is the assumption that the immunized disease is not too severe, concerns about the side effects caused after receiving the vaccine, the need for more information about the risks that arise when not giving vaccines to children.

Most of the respondents were housewives (68.2%) and were followed by parents who worked as civil servants (10.7%). The level of acceptance of MR immunization in parents of housewives is 63.2%. This figure is the lowest compared to the other professional groups of parents. Statistically, the work of parents is not related to the acceptance of MR immunization. The results of research conducted by Wardhana[19] also found that parental work was not significantly related to the completeness of basic immunization. Family decision-making in connection with the acceptance of MR immunization can be influenced by the husband as the holder of the highest hierarchy in the family. this is related to group pressure that can be accepted by a husband or housewife. Housewives will easily receive information given to them.

Parents are often overwhelmed by the amount of information and news related to immunizations that influence their decision to use vaccines[20]. For example, there are 2 opinions about the ability to use MR vaccines because they contain pig elements in their composition. The first opinion states that it is permissible to change the MR vaccine because of an emergency, and the second opinion states that it is illegal to use a vaccine prepared because it contains something that is prohibited for Muslims. Moreover, there is a lot of information circulating through social media that greatly leads opinion. Results of a study in Lusaka, Zambia by Pugliese-Garcia, Heyerdahl[21] also stated that the issue of trust / religion was one of the causes of people's doubts to vaccinate their children.

Parents who delay or refuse immunization to their children even though they know the benefits of MR immunization because parents' knowledge about the content of the circles Rubella vaccine that circulates contains pork (gelatin from pork skin and Typsin from pork pancreas) which is one of the ingredients that is not consumed for Muslims, even though the MUI has issued an amended fatwa for reasons of emergency (forced)[22,23]. Healthy behavior tends to be done because of the belief that the behavior is useful for overcoming a disease. Parents who reject MR immunization because of the assumption that immunization does not provide benefits because children already have natural immunity[24]. For this reason, it is necessary to carry out counseling and periodic outreach to both the community and mothers who have children about the benefits of MR immunization.

CONCLUSION

Socio-demographic characteristics associated with acceptance of rubella measles immunization in the work area of Tongkuno health center are the age of the child, education of the child and the age of the parents. The intensive socialization of MR immunization carried out by the government in all circles makes it easy for people to receive information that is not only influenced by education and the work of parents. Counseling needs to be done and periodic outreach to both the community and mothers who have children about the benefits of MR immunization.

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