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Review Article

Analysing Factor Affecting Measles Immunization

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ABSTRACT

Background: Immunization development program is one of the priority issues in national health that an effort to reduce the morbidity and mortality on children. East Java is one of province the number of incomplete children immunization that has reach 21% and children did not get immunization has reach 2.08 %. Objective: Knowing factors mother age, tradition, education, knowledge, income, work, attitude, siblings, family support, and health facilities has affect to the completeness of measles immunization in X public health center at Y city, Methods of the Research: This study used analytic observational with cross sectional design. Data analysis used *Chi-Square* test and logistic regression. The study involving 218 respondent consist of 114 mothers with children who have measles immunization and 104 mothers with children who do not immunize measles. Result and Discussion: There was a correlation between tradition (p = 0.020, OR = 4,428, CI = 95%), attitude (p = 0.00, OR = 5,616, CI = 95%), and maternal education (p = 0.000, OR = 0,236, CI = 95 %) on measles immunization with R value 0,234 in the amount of 23,4%. Conclusion: There exist a need of health education and counseling for improving maternal education, tradition, and attitude. Support from family, public health center and community was necessary to increase completeness of children immunization especially measles vaccine

Keywords : Immunization, measles

INTRODUCTION

Immunization development program is one of the priority activities in national health. The program aims to protect infants and toddlers from PD3I (immunized preventable diseases) such as tuberculosis, diphtheria, pertussis, tetanus and measles. According to estimates by the World Health Organization (WHO), more than 12 million children are less than 5 years old who die every year in the world, about 2 million are caused by immunized preventable diseases (Nuraini VA, 2013). The World Health Organization (WHO) expanded program on immunization recommends that

children should receive a dose of BCG immunization, three doses of diphtheria-pertussis-tetanus immunization (DPT), three doses of OPV, three doses of hepatitis B and one dose of measles (Sarfaraz et al, 2017).

Some reasons infants do not get complete immunization is due to reasons of information, motivation and situation. The reason for the information is the lack of mother's knowledge about the need, completeness and schedule of immunization, the fear of immunization and the wrong perception circulating in society about immunization. (Basuki et all, 2016).

Measles disease is the leading cause of child mortality among diseases that can be prevented by immunization (PD3I). Measles is very potential to cause an outbreak, before measles immunization is widely used in the world almost every child can be infected with measles (Ningtyas and Wibowo, 2014).

Y city city is one of the cities in East Java that has a complete basic immunization presentation with an average above 90% (93.36%). At the Pakican village health center achievement of measles immunization in 2015/2016, measles immunization reaches 207 out of 293 newborns (70.64%) and by 2016/2017 the rate of immunization against measles reaches 170 out of 256 newborns, this figure has not exceeded the target target of IDL (complete basic immunization) by 2015 (91%) and 2016 (91.5%) (X Village Immunization Report, 2015 and 2016).

Based on the description above illustrated that the measles immunization in the village health center X still not meet IDl target, where in 2015 and 2016 measles immunization has not reached IDL Indonesia target in that year. So the researcher is interested to know what factors influence the coverage of measles immunization in X public health center Y city.

METHODS

Methods of data collection in this study through observation with primary data retrieval using questionnaires that have been prepared. The researcher distributed the questionnaire directly to the respondent then gave explanation and purpose of the research and informed the respondent that the participation in this research was voluntary and kept confidential. The study involving 218 respondent consist of 114 mothers with children who have measles immunization and 104 mothers with children who do not immunize measles.

RESULTS

The data obtained is the primary data taken through questionnaire interview.

Table 5.1 Respondent Characterization

Children characteristic	Amount	Percentage (%)
Measles immunization		
Not measles	114	52,3

Measles	104	47,7
Mothers Age		
≤ 35	166	76,1
>35	52	23,9
Mother's job		
Not working	84	38,5
Working	134	61,5
Mother's education		
Low	55	25,2
High	163	74,8
Health Facilities		
Not available	11	5,0
Available	207	95
Tradition		
Not accustomed to	20	9,2
Accustomed to	198	90,8
Number of siblings		
Much	3	1,4
Less	215	98,6
Attitude		
Not appropriate	37	17
Appropriate	181	83,0
Mother's knowledge		
Low	10	4,6
High	208	95,4
Income		
Low	24	11,0
high	194	89
Total	218	100.0

Based on table 5.1 shows that the number of respondents of mothers with children who have measles immunization is 114 people (52.3%) and mothers with children who do not immunize measles is 104 people (47.7%); the number of respondents aged ≤ 35 years of 166 people (76.1%) and> 35 years of 52 people (23.9%). Based on table 5.1 shows that the number of respondents unemployed equal to 84 people (38,5%) and employed mother equal to 135 person (38,5%); the number of respondents who have low education amounted to 55 people (25.2%) and highly educated 163 people (74.8%).

Table 5.1 shows that the number of respondents who do not have health facilities is 11 people (5.0%) and who have health facilities amounted to 207 people (95.0%); the number of respondents who are not accustomed to immunization of 20 people (9.2%) and who used immunization for 198 people (90.8%). From table 5.1 we know that the number of respondents who have children with a large number of siblings of 3 people (1.4%) and the number of children who have few siblings of 215 people (98.5%); the number of respondents who have inappropriate attitude of 37 people (17.0%) and has the appropriate attitude of 181 people (83.0%). Based on

table 5.1 shows that the number of respondents who are low knowledge as many as 10 people (4.6%) and high knowledge as many as 208 people (95.4%); the number of respondents who have low income as many as 24 people (11.0%) and who have high income as much as 194 people (89.0%).

Table 5.2 Distribution Based on Measles Immunization Coverage

Individual characteristic	Measles		Total
	Incomplete	Complete	
Mother's age			
≤ 35years	89	77	166
>35 years	25	27	52
Working Mother			
Not working	50	34	84
Working	64	70	134
Health Facilities			
Not available	9	2	11
available	105	102	207
Number of siblings			
Many	1	2	3
Less	113	102	205
Tradition			
Not accustomed to	16	4	20
Accustomed to	98	100	198
Attitude			
Not appropriate	28	9	37
appropriate	86	95	181
Mother's education			
Low	17	38	55
high	97	66	163
Mother's knowledge			
Low	4	6	10
High	110	98	208
Income			
Low	9	15	24
high	105	89	194
Total	114	104	218

Based on table 5.2 shows that the number of respondents aged ≤ 35 years is 166 people, mothers with children get complete measles 77 people and age > 35 years who have children get incomplete measles by 25 people and those complete measles were 27 people. The number of respondent did not work whose children were not exposed to measles vaccine by 50 people, and

those who were affected by measles vaccine were 34 people and working respondents whose children were not affected by measles by 64 people and those with measles 70 people.

From table 5.2 know that the number of respondents who do not have health facilities whose children are not affected by measles by 9 people, and who are affected measles 2 people and who have health facilities that are not exposed to measles of 105 people and those affected by measles 102 people.

Table 5.2 shows that the number of respondents with many siblings who are not affected by measles is 1 person, and those who have measles are 2, and those with less than 113 relatives who are not affected measles and 102 people with measles.

Based on table 5.2 shows that the number of respondents who are unaccustomed to measles that are not affected by measles are 16 people, and those with measles are 4 people, and those who are accustomed to measles that are not affected by measles are 98 people and those with measles are 100 people. The number of respondents with inappropriate attitude that is not affected by measles are 28 people, and those who are affected by measles are 9 people, and respondents with appropriate attitude that is not affected by measles is 86 people and those with measles are 95 people.

Based on table 5.2 shows that the number of respondents of mothers with low education who were not affected by measles were 17 people, and those who were exposed to measles were 38 people, maternal respondents with higher education who were not affected by measles were 97 people and those with measles were 66. The number of respondents of mothers with low knowledge who are not affected by measles as many as 4 people, and those affected by measles as many as 6 people, and mothers with high knowledge that is not affected by measles as many as 110 people and those with measles counted 98 people.

Table 5.2 shows that the number of respondents with low income who are not affected by measles as many as 9 people, and those affected by measles as many as 15 people, and respondents with high income not affected by measles as many as 1105 people and those affected by measles were 89 people.

Table 5.3 Results of Bivariate Analysis (*Chi-Square)*

	Sig.
Mother's age	0.590
Mother's work	0.120
Health facility	0.089
Number of siblings	0.607
Tradition	0.018
Attitude	0.003
Mother's education	0.000
Mother's knowledge	0.524
Income	0.186

Based on table 5.3 shows that there is a relationship (p <0.05) between attitudes, traditions and maternal education with measles immunization, but not with maternal age, maternal employment, health facilities, number of siblings, mother's knowledge and income.

Table 5.4 Logistic Regression Multivariate Analysis

Variable	coefficient	p	OR (IK95%)
Tradition (1)	1,488	0,020	4,428
Attitude (1)	1,726	0,000	5,616
Mother's education(1)	-1,391	0,000	0,249
Constants	-3,722	0,001	
Nagelkerke R Square 0,234			

Table 5.4 shows that there are 3 variables that can influence measles immunization in children under five years old, namely tradition (p = 0.020), attitude (p = 0.000) and mother's education (p = 0.000).

Based on the coefficient value of each variable obtained logistic regression equation as follows: y = -3,722s + 1,488 (tradition accustomed to immunization) + 1,726 (attitude appropriate) -1,391 (mother's education high).

The application of the obtained equation is to predict the probability of a toddler to get measles immunization using the formula: $p = 1/(1+e^{-y})$. From the above it can be predict that if the tradition of immunization, attitudes and education are low, then the chance of a toddler to get measles immunization is 37.56% and very inversely with if the tradition is not accustomed to immunization, inappropriate attitude and higher education so that only have a chance to get measles immunization only 0.59%.

The magnitude of the relationship strength of the independent variables (tradition, attitude and education of mothers) that affect the dependent variable in this study can be seen through R square as much as 23.4% while the rest of 76.6% can be explained by various other factors. This shows that the independent variables (tradition, attitudes and education of the mother) have weak relationship strength.

DISCUSSION

The characteristic of tradition toward measles immunization in this study has a p-value of 0,02, which means that there is a relationship between tradition toward measles immunization. This is in accordance with the theory Rahmawati (2014) that customs are included in ethnic groups where ethnic groups include homogeneous groups based on living habits and biological or genetic homogeneity. Ethnic groups are classified based more on differences in customs, living habits and

possibly social, economic and environmental conditions, types of work and others. OR 4.428 means that family tradition accustomed to giving immunization to infants or toddlers is at risk of 4.428 times causing infants or toddlers to get complete immunization compared to unaccustomed family tradition.

Characteristics of attitudes toward measles immunization in this study have a p-value of 0.000, which means there is a relationship between attitudes toward measles immunization. This is consistent with Tampemawa's (2015) research that some respondents have a good attitude towards immunization status as much as 76 respondents, from 76 respondents who gave Immunization Complete to their children of 65.6% (57 respondents) and incomplete immunization of 21, 8% (19 respondents), seen from significance value of 0,003 thus probability (significance) less than 0,05 (0,003 <0,05), hence there is relation between mother attitude with immunization status. Viewed from the OR (Odds Ratio) indicates that the mother who has a good attitude is likely to give complete immunization as much as 8 times greater than the mother has a bad attitude towards the status of immunization. The variable in this study has significance of 0.000 which means significant value <0,05 so that there is relationship strength and influence the incidence of measles immunization 5,616 times (OR = 5,616).

The characteristics of maternal education on measles immunization in this study have a p-value of 0.000, which means that there is a relationship between maternal education on measles immunization. This is in accordance with research Rahmawati (2014) is the mother who has infants or toddlers with the most complete immunization status in mothers with education level ≥ 9 years (upper secondary education) of 84.1%. While mothers with infants or infants with incomplete immunization status are mostly at the education level <9 years (basic education) of 72.7%. Statistic test results obtained p value of 0.000 ($p < \alpha$) which means there is a relationship between the level of education to the completeness of immunization in infants or toddlers. OR = 14.095 means that mothers with education level <9 years are at risk 14,095 times cause incomplete basic immunization in infant or toddler compared to mother who have level of education ≥ 9 years. The variable in this study has significance of 0.000 which means significant value <0,05 so that there is strength of relationship and influence the incidence of measles immunization 0,249 fold (OR = 0,249).

The study was also in line with Tagbo et al's study, 2014 on immunization coverage and its influencing factors in children aged 11-23 months in the Nigerian capital who stated that the completeness of immunization coverage in children is due to good knowledge of immunization in the study respondents (Tagbo et al, 2014).

Similarly, research conducted by Awadh, et al 2014 says that parents' knowledge, especially mothers, has a great influence on the level of completeness of childhood immunization and the accuracy of childhood immunization schedules (Awadh et al, 2015).

This result is in line with research by Legesse and Dechasa 2015 which states that children with mothers who had a good knowledge of immunization are 2.5 times more likely to receive immunization compared with children with mothers with low knowledge of immunization (Legesse dan Dechasa, 2015). A short educational intervention designed for parents had a positive effect on their knowledge about immunization. Educational interventions targeting parents with low levels of education and income are needed. (Awadh Ammar, Hassali Mohammed, Al-Lela Omer, Et al. 2014)

This is in line with the 2015 Ramavaoya journal of maternal knowledge related to immunization against children in the Vhembe area of Limpopo province of India that there was no significant influence between maternal education level and immunization in children. Study from Vinodkumar said that there were no association was found between the children's immunization status and area of residence, birth order or mother's education. (Vinodkumar, dkk. 2017).

The parental Knowledge, Attitude and Practice about child vaccination are important determinants of the immunization status of their child. (Trushitkumar, Pathak, Singh, et al. 2017) A lack of information and motivation among the parents is the main reason for the shortness of immunization coverage, that needs to be rectified at the earliest (Angadi, 2013). Health professionals play a major role in creating both Immunization awareness and administration in prescribed date to mothers. (Dharmalingam A et al. 2017)

In addition, in this study it was said that there was no significant relationship between maternal age with immunization in children (Ramavhoya, Maputle dan Lebese, 2015). The study of Tanjung et al, 2017 is also in line with the results of this study on basic immunization coverage and influencing factors, stating that there was no influence of birth order, number of children and maternal age on completeness of basic immunization (Tanjung, Rohmawati, Sofyani, 2017). Study of Jolsna Joseph (2015) said that Socio-demographic factors had a significant influence on the immunization status. Study of Otubor,Chris, Dangiwa, Ior, Et al. (2015) also showed that the education of the mother, marital status, religion, geopolitical zone and her and/or the father of the child been immunized as children significantly influenced their knowledge ($p<0.05$).

Hafid et al, 2016 study on the determinants of basic immunization status in infants in the community health centers Konang and Geger suggests that maternal work has no effect on the basic immunization status of infants (Hafid, Santi dan Devy, 2016). This result is in line with previous research by Sari 2015 on comparing the completeness of basic immunization in infants with working mothers and not working. That there was no difference in immunization completeness status between mothers who work with unemployed mothers (Sari, 2015). Poor vaccination rates in the community are could due to caregivers' fear of side effects and disinterest or ignorance towards vaccinations. This call need health promotion. (Vonasek Bryan. 2016)

CONCLUSION

The results of this study were expected to be used as a trigger in order to further improve the achievement in the implementation of the basic immunization program especially measles vaccine. There exist a need to to counsel women who do not do basic immunization to their children especially measles vaccine. Counseling needed because counseling about primary immunization has a significant effect on improving mother's knowledge and attitude about basic immunization (Palupi, 2011). Health education and counseling needed for improving maternal education, tradition, and attitude. Creating health promotion media also alternative ways to improve mothers knowledge, tradition and attitude. Support from family, public health center and community was necessary to increase completeness of children immunization especially measles vaccine. A combined effort from the members of the healthcare team and social health workers can definitely make the attainment of the targeted immunization coverage rate in the country possible.

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