Contextual Effect of the Integrated Health Post and Other Determinants on Completeness of Basic Child Immunization: A Multilevel Analysis Evidence from Jember, East Java

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ABSTRACT

Background: Every year, more than 1.4 million children worldwide die from diseases that can be prevented by immunization. Immunization is still one of the most cost-effective preventive measures to reduce mortality and morbidity among children. This study aimed to analyze the influence of posyandu contextual and maternal characteristics on the provision of complete basic immunization in children aged 12-23 months.

Subjects and Method: This was an observational analytic study with a cross sectional design. The study was conducted at 25 integrated health posts (posyandu) in Jember, East Java, Indonesia from September to October 2019. A sample of 200 mothers who had children aged 12-23 months was selected by simple random sampling. The dependent variable was complete basic immunization. The independent variables were maternal education, maternal knowledge, parity, maternal employment status, family income, maternal attitude, family support, and contextual effect of posyandu. The data were collected by questionnaire and analyzed by a multilevel logistic regression analysis run on Stata 13.

Results: Provision of complete basic immunization increased with maternal education ≥Senior high school (b= 2.99; 95% CI= 1.26 to 4.73; p= 0.001), good maternal knowledge (b= 1.93; 95% CI= 0.38 to 3.53; p= 0.018), family income ≥Rp 2,170,000 (b= 1.18; 95% CI= -0.15 to 2.50; p= 0.081), positive maternal attitude (b= 1.92; 95% CI= 0.45 to 3.39; p= 0.011), and strong family support (b= 2.29; 95% CI= 0.62 to 3.96; p= 0.007). Complete basic immunization decreased with maternal parity ≥3 (b= -1.35; 95% CI= -2.68 to -0.01; p= 0.048) and mother working outside the home (b= -2.67; 95% CI= -4.49 to - 0.85; p= 0.004). Posyandu had contextual effect on the provision of complete basic immunization in children aged 12-23 months with ICC= 23.65%.

Conclusion: Provision of complete basic immunization increases with maternal education ≥Senior high school, good maternal knowledge, family income ≥Rp 2,170,000, positive maternal attitude, and strong family support. Complete basic immunization decreases with maternal parity ≥3 and mother working outside the home. Posyandu has contextual effect on the provision of complete basic immunization in children.

Keywords: basic immunization, children aged 12-23 months, integrated health post, multilevel analysis

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BACKGROUND

Every year, more than 1.4 million children worldwide die from various diseases that can actually be prevented by immunization (Ministry of Health, 2016). Immunization is an effort to prevent infectious diseases which is one of the priority activities of the Ministry of Health as a tangible form of government commitment to achieve Sustainable Development Goals (SDGs), especially to reduce child mortality (Ministry of Health, 2017). Immunization is still one of the most cost-effective preventive measures to reduce mortality and morbidity among children.

Immunization is an effort to actively raise/ increase a person's immunity to a disease, so that if one day exposed to the disease, it will not hurt or only experience mild illness. Some infectious diseases that can be prevented with immunization include TB, diphtheria, tetanus, hepatitis B, pertussis, measles, polio, meningitis, and pneumonia (Ministry of Health, 2016).

Basic research data in 2018 reported complete basic immunization coverage for children aged 12-23 months that is equal to 57.9% (Ministry of Health, 2018).

In 2017 in East Java there were 547,729 babies (96.48%) who had received Basic Immunization. The target of complete basic immunization in East Java province 2017 is 91.5%. In East Java, there are 8 regencies which are still below the target of 91.5%, namely Pacitan, Jember, Situbondo, Probolinggo, Ngawi, Bangkalan, Pamekasan, and Blitar City. Coverage of basic immunization in Jember Regency in 2017 is 87.02% (East Java Provincial Health Office, 2018).

The cumulative coverage of immunization is one indicator of the Posyandu Independence Study (TKP). Posyandu with independent strata increases the likelihood of giving complete basic immunizations rather than Posyandu with full and intermediate strata. Posyandu strata have a two-way rela-

tionship with the quality and quantity of services in Posyandu so that there are differrences in output in the community.

SUBJECTS AND METHOD

1. Study Design
This was observational analytic study with cross sectional approach conducted at 25 Posyandu in Jember. It was conducted from September to October 2019.

2. Population and Samples
The population in this study included mothers who had children aged 12-23 months at 25 Posyandu in Jember, East Java. The number of samples consisted of 200 mothers. The sampling in this study was carried out using simple random sampling.

3. Study Variables
The dependent variable was complete basic immunization. The independent variables were maternal education, maternal knowledge, parity, maternal employment status, family income, attitude, family support, and contextual Posyandu.

4. Operational Definition of Variables
Posyandu contextual effect was the potential Posyandu effect on completeness of immunization stemming from various variables at Posyandu level, such as quality of service, infrastructure condition, and Posyandu strata. The measurement tool is secondary data from the Health Office and Health Center in Jember Regency. The data on Posyandu strata were categorical coded 1= Madya; 2= Purnama; 3= Mandiri (independent).

Provision of basic immunization was the provision of basic immunizations to children aged 0-11 months. The measuring instrument used was Maternal and Child Health book. The data scale was categorical with code 0= incomplete; 1= complete.

Maternal education was the last formal education taken by the mother. The measuring instrument used was a questionnaire. The data scale was categorical with code 0 for

<Senior high school and 1 for ≥Senior high school.

Maternal employment status was an activity carried out by the mother to earn income. The measuring instrument used was a questionnaire. The data scale was categorical coded 0= working at home; 1= work outside the home.

Maternal knowledge was mother knowledge about immunization as a result of information received and understood. The measuring instrument used was a questionnaire. The scale of the data was continuous, and to facilitate analysis, the data was converted into dichotomous coded 0= poor (<7.68); 1= good (≥7.68).

The mother's attitude was the mother's response in the form of a statement of agree or disagree with the delivery of immunizations to her baby. The measuring instrument used was a questionnaire. The scale of the data was continuous, and to facilitate analysis, the data was converted into dichotomous coded 0= negative (<48); 1= positive (≥48).

Parity was the amount of maternal history in child birth. The measuring instrument used was a questionnaire. The scale of the data was continuous, and to facilitate analysis, the data was converted into dichotomous coded 0= <3; 1= ≥3.

Family income was the total amount of husband and wife income earned for the type of work done in each month. The measuring instrument used was a questionnaire. The scale of the data was continuous, to facilitate analysis, the data was converted into dichotomous coded 0= low (<Rp 2,170,000); 1= height (≥ Rp 2,170,000).

Family support is any form of support / assistance provided by the family (husband, parents and parents-in-law) in providing immunizations to infants. The measuring instrument used was a questionnaire. The scale of the data was continuous, and to facilitate analysis, the data was converted into dichoto-mous coded 0= weak (<8); 1= strong (≥8).

5. Data Analysis

Univariate analysis was carried out to describe in general each of the variables studied included immunization status, maternal education, maternal knowledge, total parity of mothers, mother's occupation, father's occupation, family income, maternal attitudes, and family support.

Bivariate analysis was carried out to explain the effect of an independent variable (education, knowledge, number of parities, maternal work, family income, mother's attitude, and family support) on one dependent variable (providing complete basic immunization).

Multivariate analysis was performed to explain the effect of more than one independent variable on the administration of complete basic immunization. Multivariate analysis in this study was conducted using multilevel logistic regression analysis with Stata 13. Multilevel analysis at the first level is on individual characteristics and Posyandu at the second level.

6. Research Ethics

This study was conducted based on research ethics, namely informed consent, anonymity, confidentiality, and ethical eligibility. Ethics permit in this study was obtained from Health Research Ethics Commission from Dr. Moewardi Hospital, Surakarta, Indonesia, No. 1.027 / VIII / HREC / 2019.

RESULTS

1. Characteristics of Samples

The sample characteristics describe the continuous data of each study variable. The results of the analysis of continuous data sample descriptions are shown in Table 1.

2. Univariate Analysis

Table 2 shows that there are 51 study subjects (25.5%) with incomplete immunization status and 149 study subjects (74.5%) with complete immunization status. Those with low mater-

nal education are 77 mothers (38.5%) and those with higher education consisted of 123 mothers (61.5%). Those with lack of maternal

knowledge amounted to 89 mothers (44.5%) and those with good knowledge are 111 mothers (55.5%).

Table1. Sample characteristics of continuous data

Independent Variables	N	Mean	SD	Min.	Max.
Mother's knowledge	200	7.68	1.76	3	12
Family Income (Rupiah)	200	2,884,750	1,272,646	750,000	9,000,000
Mother's attitude	200	48	4.00	35	58
Family Support	200	8	2.34	1	11

Mothers with a parity number <3 were 135 (67.5%) and mothers who had a parity number ≥ 3 were 65 mothers (32.5%). The majority of mothers' jobs are working at home with 141 mothers (70.5%), those who work as entrepreneurs are 26 mothers (13%), who are private employees are 17 mothers (8.5%), of whom civil servants are 5 (2.5%) and the others were 11 mothers (5.5%). The majority of father's occupations are 82 private employees (41%), 79 entrepreneurs (39.5%), 17 civil servants (8.5%), 15 farmers (7.5%) and 7 others (3.5%). Those who have low incomes are 79 families (39.5%) and those who have high incomes are 121 families (60.5%). Mothers who had negative attitudes were 63 mothers (31.5%) and those who had positive attitudes were 137 mothers (68.5%). Those with weak family support were 59 mothers (29.5%) and those with strong family support were 141 mothers (70.5%).

3. Bivariate Analysis

Bivariate analysis in this study was performed using Chi Square analysis. Table 3 shows the test results of the influence of independent study variables on the administration of complete basic immunizations.

The level of education influences the provision of complete basic immunization. Mothers who are educated ≥high school have the possibility to provide complete basic immunization to their babies by 15.20 times compared to education <high school (OR= 15.20; p<0.001).

Mother's knowledge influences the provision of complete basic immunization. Mothers who have good knowledge have the possibility to provide complete basic immunization to their babies by 1.95 times less knowledge (OR= 1.95; p= 0.040).

Maternal parity influences the provision of complete basic immunization Mothers with parity ≥3 have the possibility to give complete basic immunization to their babies by 0.17 times compared to parity <3 (OR= 0.17; p<0.001).

Mother's occupational status influences the provision of complete basic immunization. Mothers who work outside the home have the possibility to provide complete basic immunization to their babies by 0.22 times compared to mothers who work at home (OR= 0.22; p<0.001).

Family income influences the provision of complete basic immunization. Mother with family income ≥Rp 2,170,000 have the possibility of providing complete basic immunization to their babies at 8.86 times compared to family income <Rp 2,170,000 (OR= 8.86; p<0.001).

The mother's attitude influences the delivery of complete basic immunization. Mothers who have a positive attitude have the possibility of giving complete basic immunization to their baby by 9.45 times compared to a negative attitude (OR= 9.45; p<0.001). Family support influences the provision of complete basic immunization. Mothers with

strong family support were more likely to provide complete basic immunization to their babies by 17.82 times compared to weak family support (OR= 17.82; p< 0.001).

4. Multivariate Analysis

Multivariate analysis was performed using the multilevel multiple logistic regression method using the Stata 13 program. Table 4 shows that complete basic immunization increased with maternal education level ≥ high school (b= 2.99; 95% CI= 1.26 to 4.73; p= 0.001), good maternal knowledge (b= 1.93; 95% CI= 0.38 to 3.53; p= 0.018), high family income ≥2,170,000 (b= 1.18; 95% CI= -0.15 to 2.50; p= 0.081), positive mother's attitude (b= 1.92; 95% CI= 0.45 to 3.39; p= 0.011), and support strong family (b= 2.29; 95% CI= 0.62 to 3.96; p= 0.007).

Table 2. Sample characteristics of categorical data

Independent Variables	Frequency (n)	Percent (%)
Immunization Status		
Incomplete	51	25.5 %
Complete	149	74.5 %
Maternal Education		
Low (<SHS)	77	38.5 %
High (≥ SHS)	123	61.5 %
Mother's Knowledge		
Poor	89	44.5 %
Good	111	55.5 %
Parity		
< 3	135	67.5 %
≥ 3	65	32.5 %
Mother's Occupation		
Housewife	141	70.5 %
Entrepreneur	26	13.0 %
Private employee	17	8.5 %
Civil Servant	5	2.5 %
Others	11	5.5 %
Father's Occupation		
Entrepreneur	79	39.5 %
Private employee	82	41 %
Civil Servant	17	8.5 %
Farmer	15	7.5 %
Others	7	3.5 %
Family Income		
Low<Rp 2,170,000	79	39.5 %
High≥ Rp 2,170,000	121	60.5 %
Mother's Attitude		
Negative	63	31.5 %
Positive	137	68.5 %
Family Support		
Weak	59	29.5%
Strong	141	70.5%

Complete basic immunization decreased with maternal parity ≥ 3 (b= -1.35; 95% CI= -2.68 to -0.01; p= 0.048) and the mother worked outside the home (b= -2.67; 95% CI= -4.49 to -0.85; p= 0.004). Posyandu has a contextual effect on providing basic immunization with Intra-Class Correlation (ICC)= 23.65%.

Table 3. Chi Square test factors that influence the provision of complete basic immunization

Independent Variables	Immunization Status				OR	p
	Incomplete		Complete			
	n=51	%	n=141	%		
Maternal Education						
Low (<SHS)	42	54.5	35	45.5	15.20	<0.001
High (≥SHS)	9	7.3	114	92.7		
Maternal Knowledge						
Poor	29	32.6	60	67.4	1.95	0.040
Good	22	19.8	89	80.2		
Parity						
<3	19	14.1	116	85.9	0.17	<0.001
≥ 3	32	49.2	33	50.8		
Mother's Employment Status						
Housewife	23	16.3	118	83.7	0.22	<0.001
Working outside home	28	47.5	31	52.5		
Family Income						
Low (<Rp 2,170,000)	39	49.4	40	50.6	8.86	<0.001
High (≥ Rp 2,170,000)	12	9.9	109	90.1		
Mother's Attitude						
Negative	35	55.6	28	44.4	9.45	<0.001
Positive	16	11.7	121	88.3		
Family Support						
Weak	38	64.4	21	35.6	17.82	<0.001
Strong	13	9.2	128	90.8		

DISCUSSION

1. The effect of Posyandu contextual on complete basic immunization for children aged 12-23 months

The results showed that there was a Posyandu contextual influence on the provision of complete basic immunization (ICC= 23.65%). The indicator shows that 23.65% of variation in the provision of complete basic immunization is determined by variables at the Posyandu level.

The results of this study were in line with the study of Abadura et al. (2015), which states that immunization in children is influenced by various individual factors and contextual factors. The results of multilevel analysis in this study showed an ICC of 20.53%, which means that 20.53% of variation in immunization in children is determined by factors at the community level. The cumulative coverage of immunization is one indicator of the Posyandu Independence Study (TKP). Posyandu with independent strata increases the likelihood of giving complete basic immunizations rather than Posyandu with full and intermediate strata.

Table 4. Multilevel multiple logistic regression of factors influencing complete basic immunization in children aged 12-23 months

Independent Variables	Regression Coefficient (b)	95% CI Upper Limit	Lower Limit	p
Fixed Effect				
Maternal education (≥SHS)	2.99	1.26	4.73	0.001
Maternal knowledge (good)	1.93	0.38	3.53	0.018
Parity (≥3)	-1.35	-2.68	-0.01	0.048
Mother's Employment Status (working	-2.67	-4.49	-0.85	0.004
outside house)	1.18	-0.15	2.50	0.081
Family Income (≥Rp 2,170,000)	1.92	0.45	3.39	0.011
Mother's Attitude (positive)	2.29	0.62	3.96	0.007
Family Support (strong)				
Random Effect				
Posyandu	1.02	0.10	10.36	
Var (constant)				
N observation= 200				
N group= 25				
Log likelihood= - 43.17				
LR test vs. logistic regression p= 0.114				
ICC= 23.65 %				

Posyandu serves as a forum for community empowerment in the transfer of information and skills from officers to the community and among fellow people and basic health services, especially those related to the reduction in Maternal Mortality Rate (MMR), Infant Mortality Rate and Infant Mortality Rate (IMR). If Posyandu activities are carried out well, they will contribute greatly in reducing maternal, infant and under-five mortality rates (Ministry of Health, 2012).

The role of Posyandu cadres is an important factor in immunization activities. The role of cadres is needed so that the implementation of immunization activities can run on a predetermined schedule (Wulandari, 2011). Seprianingtyas et al. (2017) shows that there is an influence of cadre support in providing complete basic immunization. This means that the role of cadres in Posyandu is very important to help health personnel in creating a healthy and prosperous generation.

2. The effect of mother's education on the provision of complete basic immunization in children aged 12-23 months

The results of this study indicate that there was a positive influence of maternal education (b= 2.99; 95% CI= 1.26 to 4.73; p= 0.001) on the provision of complete basic immunization in children aged 12-23 months. Mothers whose education ≥ of high school have logodd (probability) to provide complete basic immunization to their babies 2.99 units higher than mothers with <high school education.

The results of this study were in line with study by Awasthi et al. (2015) which stated that there is an influence of maternal education on the provision of complete basic immunization (OR= 1.59; 95% CI= 1.30 to 2.88). This study is in line with Mbengue et al. (2017) which shows that children aged 12-23 months who have highly educated mothers are more likely to be fully immunized

(AOR= 1.08; 95% CI= 1.20 to 2.48; p= 0.001) compared to children with low educated mothers.

This is in accordance with the theory of Dimyanti and Mudjiono (2009) stating that education can improve one's abilities in the cognitive, affective and psychomotor domains. An educated person will have better knowledge that influences behavior. The higher is a person's education, the better is behavior.

Eide and Showalter (2011), suggested that there was a positive relationship between higher education and health behavior. Higher education levels are positively associated with longevity and better health behavior. If a mother has a high level of education, even more knowledge is gained. Therefore, the mother's perception of the possibility of her child being exposed to an illness will emerge. This vulnerability will encourage mothers to provide complete basic immunization to their children (Jayanti et al., 2017).

In addition, Holipah et al. (2018) stated that a mother with a better educational background tends to realize the importance of immunization. Educated mothers are more receptive to new things and modern ideas, more confident in taking decisions for the health of their family and more skilled in obtaining health information.

3. The effect of maternal knowledge on complete basic immunization in children aged 12-23 months

The results of this study indicate that there was a positive influence of maternal knowledge (b= 1.93; 95% CI= 0.38 to 3.53; p= 0.018) on the provision of complete basic immunization in children aged 12-23 months. Mothers with good knowledge have a logodd (probability) to provide complete basic immunization to their babies 1.93 units higher than mothers with less knowledge.

The results of this study were in line with the study conducted by Kipto et al.

(2015) which stated that poor knowledge about immunization schedules significantly led to low immunization coverage in children aged 12-23 months (OR= 9.04; 95% CI= 1.37 to 7.87; p= 0).

This study is also in line with the study of Smith et al. (2017), which stated one of the factors that influence immunization coverage is vaccine knowledge. The reason parents do not give vaccines is because they have the wrong knowledge about the vaccination schedule, lack of knowledge about vaccines/ where to get it, believe that the previous vaccine dosage is still effective and feel just one vaccine dose is enough.

This study concludes that mother's knowledge can influence their beliefs so that mothers will behave in accordance with their beliefs. Good knowledge about basic immunization is expected to increase the awareness of mothers on the importance of giving basic immunizations in full to their children.

4. The effect of maternal parity on complete basic immunization in children aged 12-23 months

The results of this study indicate that there was a negative influence of maternal parity (b= -1.35; 95% CI= -2.68 to -0.01; p= 0.048) on the provision of complete basic immunization in children aged 12-23 months. Mothers with high parity (≥ 3) have logodd (likely) to provide complete basic immunization to infants by 1.35 units lower than mothers with low parity (<3).

The results of this study were in line with the study conducted by Kipto et al. (2015) which stated that the number of children in the family is a factor influencing the low coverage of immunization in the East Pokot (OR= 1.61; 95% CI= 0.49 to 5.27; p= 0.0022). In addition, Awasthi et al. (2015), state parity significantly influences the complete immunization status of children aged 12-23 months (OR= 4.36; 95% CI= 2.82 to 6.74; p= 0.001).

There was a significant relationship between the number of family members and the provision of complete immunizations. Mothers who have more than 4 children are 2 times more likely to not give complete immunizations to their children than mothers who have children less than 3. Children from families with large numbers have been found to have low immunization coverage by some researchers (Orenstein et al., 2005). Awasthi et al. (2015) concluded that mothers with three or more children may not be motivated to give immunizations to their newborn children.

The results of this study concluded that mothers who have children ≥3 will need more time to take care of their families than mothers who have children <3, so the availability of time for mothers to take their children to immunization services is very limited.

5. The effect of maternal employment status on the provision of complete basic immunization in children aged 12-23 months

The results of this study indicate that there was a negative effect on maternal employment status (b= -2.67; 95% CI= -4.49 to -0.85; p= 0.004) on the administration of complete basic immunization in children aged 12-23 months. Mothers who work outside the home have a logodd (probability) to provide complete basic immunization to infants by 2.67 units lower than mothers who work at home (housewife).

The results of this study were in line with the study by Awasthi et al. (2015), which stated that maternal employment status influences the immunization status of children 12-23 months (OR= 1.39; 95% CI= 1.21 to 2.63; p= 0.03). In addition, Adenike et al. (2017) stated that there is a significant relationship between employment status and the immunization status of children.

Many mothers do not immunize their children because they are busy with their work. Most mothers who work outside the home pay less attention to the condition of their children because mothers have other activities besides taking care of their children at home. So that mothers are less able to pay attention to the growth and development of their children including the needs of their children to get complete basic immunizations (Hudhah and Hidajah, 2017).

The results of this study concluded that mothers who work outside the home with sufficiently dense time will affect their presence in the implementation of Posyandu. The longer time working for the mother, the more difficult it is for the mother to come to the Posyandu to immunize her child because the mother does not have much free time.

6. The effect of family income on the provision of complete basic immunization in children aged 12-23 months

This study indicates positive influence of family income (b= 1.18; 95% CI= -0.15 to 2.50; p= 0.081) on complete basic immunization in children aged 12-23 months. Mothers with high family income (≥Rp 2,170,000) have a logodd (probability) to provide their infants with full basic immunization 1.18 units higher than mothers with low family income (<Rp 2,170,000).

The results of this study were in line with study by Landoh et al. (2016) which stated that children from poor households have a 1.7 times chance of not being immunized (p= 0.01). Inayati et al. (2018) stated that DPT3 immunization was influenced by family income (b= 2.56; 95% CI= 0.45 to 4.67; p= 0.017). In addition, Legesse and Dechasa (2015) stated that family income is a factor that significantly influences the coverage of immunization in children (AOR= 3.2; 95% CI= 1.4 to 7.4). If the family's income is high, they will have easy access to the media which allows them to be exposed to information related to immunization through that media.

The poorer a household is, the more the children tend to be not fully immunized. Lack of money causes poor health (Adedokun et al., 2017). According to Saeed et al. (2013), family income has a significant influence on the decision to seek health services in Ghana. Even though there are government subsidies, low-income people still have difficulty being able to access health services due to transportation costs and other costs that must be paid for themselves (Pratiwi, 2012). In addition, study by Salesman (2017) stated that family income increases the likelihood of babies to get complete basic immunizations. High income makes it easier for mothers to pay for transportation costs to go to the immunization service.

Economic conditions affect completeness of immunization, because access to immunization services requires medical cost and travel cost (Landoh et al, 2016).

7. The effect of mother's attitude on giving complete basic immunization in children aged 12-23 months

The results of this study indicate that there was a positive influence on maternal attitudes (b= 1.92; 95% CI= 0.45 to 3.39; p= 0.011) on the provision of complete basic immunization in children aged 12-23 months. Mothers with positive attitudes have a logodd (probability) to provide complete basic immunization to their babies 1.92 units higher than mothers with negative attitudes.

The results of this study were in line with the Triana study (2015) which stated that parents who have negative attitudes about immunization are 1.92 times more likely to not give complete basic immunization to their babies than mothers who have positive attitudes. This study was also in line with study Hudhah and Hidajah (2017) which stated that maternal attitudes are associated with achieving complete basic immunization.

Factors that influence respondents to have a negative attitude towards immuniza-tion are the mother's lack of knowledge about immunization, the less mother's knowledge about immunization, the greater the impact on the formation of a negative mother's attitude about immunization. A person's attitude is influenced by the knowledge he has, where the higher the level of knowledge a person has of a thing, the better the attitude he has of it. In addition, attitudes can be influenced by personal experience factors, the influence of others who are considered important, the influence of culture, mass media, religious institutions and emotional factors (Azwar, 2013).

One factor that can influence attitudes is the influence of others who are considered important. For this reason, the roles of cadres, village midwives and immunization program holders are needed to provide information and understanding so that they can influence the attitudes of mothers. If health cadres, village midwives, and program holders can play their role as the spearhead of preventive efforts (immunization services) then the possibility of all mothers can be good in providing immunizations to their children (Hudhah and Hidajah, 2017).

8. The effect of family support on providing basic immunization in children aged 12-23 months

The results of this study indicate that there was a positive influence of family support (b= 2.29; 95% CI= 0.62 to 3.96; p= 0.007) on the provision of complete basic immunization in children aged 12-23 months. Mothers with strong family support have the logodd (probability) to provide complete basic immunization to their babies 2.29 units higher than mothers with weak family support.

The results of this study were in line with Mokodompit et al. (2015) which stated there is a relationship between family support and complete immunization status. The results of this study are also supported by Putri et al. (2017), where the results of his

study mention that there is an influence of family support on the status of complete immunization through attitude.

The family is the smallest part of the community consisting of the head of the family and other family members who live in one house because of the marriage ties, so there is interaction between family members with other family members, if one of the family members has a health problem, then it will affect other family members. Therefore, the family is a strategic focus of health services because it has a major role in maintaining the health of all family members and family problems are interrelated, the family can also be a place for decision making in health care (Mubarak, 2012).

Family support is an important factor in healthy behavior. Families who believe in the benefits of immunization for their babies will support family members to make optimal use of health services. Family support can be in the form of providing information to mothers about immunization, accompanying mothers to immunize their babies and helping mothers care for babies after getting immunized (Senewe, 2017).

The results of this study concluded that if a family supports a mother in providing complete immunization for her baby, then the mother is likely to have a positive attitude and behavior in providing complete immunization for her baby. Conversely, if family members do not provide support, it will be difficult for a mother to provide complete immunization for her baby.

AUTHOR CONTRIBUTION

Revina Fiandany Erynda compiled study articles and collected data. Endang Sutisna Sulaeman suggested background and discussion. Eti Poncorini Pamungkasari formulated the conceptual framework and examined the results of data analysis.

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