

Contextual Effect of the Integrated Health Post and Social Capital on Completeness of Child Immunization in Pacitan, East Java

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ABSTRACT

Background: Around 2-3 million deaths each year were caused by diseases that could be prevented by immunization. Immunization is an effort to actively increase a person's immunity against a disease. The Completeness of basic immunization status is influenced by various factors. This study aimed to analyze the factors at the individual level and the integrated health post level that affected the complete basic immunization status of infants.

Subjects and Method: This was an observational analytic study with a cross-sectional design. The study was conducted in 25 Integrated Health Post in Pacitan Regency, East Java. The sample of this study was 200 infants aged 12-23 months. The sample was selected by a simple random sampling technique. The dependent variable was complete basic immunization status. The independent variables were knowledge, self-efficacy, outcome expectations, vicarious learning, health workers support, social capital, and Integrated Health Post strata. Data were analyzed using multilevel logistic regression.

Results: Complete basic immunization status increased by good knowledge (OR=10.16; 95% CI=1.48 to 69.98; p=0.019), high self-efficacy (OR=10.32; 95% CI=2.01 to 53.13; p=0.005),

positive outcome expectations (OR=20.40; 95% CI=3.39 to 123; p=0.001), had done vicarious learning (OR=4.35; 95% CI=0.90 to 21.10; p=0.068), strong health workers support (OR=14.54; 95% CI=2.63 to 80.65; p=0.002), and strong social capital (OR=6.54; 95% CI=1.41 to 30.40; p=0.017). Integrated Health Post strata had a contextual effect on the complete basic immunization status with Intra-Class Correlation (ICC) = 34.15%.

Conclusion: Complete basic immunization status increases with good knowledge, high self-efficacy, positive outcome expectations, had done vicarious learning, and strong social capital. Integrated Health Post strata have a contextual effect on the complete basic immunization status.

Keywords: complete basic immunization status, social cognitive theory, multi-level analysis.

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Cite this as:

Prabowo PM, Rahardjo SS, Pamungkasari EP (2020). Contextual Effect of the Integrated Health Post and Social Capital on Completeness of Child Immunization in Pacitan, East Java. *J Matern Child Health*. 05(05): 525-536. <https://doi.org/10.26911/thejmch.2020.05.05.07>.



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BACKGROUND

Around 2-3 million deaths each year were caused by diseases that could be prevented by immunization. Immunization aims to prevent and reduce morbidity, disability, and death caused by diseases that can be

prevented by immunization. Every infant aged 0-11 months in Indonesia is required to receive complete basic immunization consisting of 1 dose of Hepatitis B, 1 dose of BCG, 3 doses of DPT-HB-HiB, 4 doses of

polio drops, and 1 dose of measles-rubella (Indonesian Ministry of Health, 2018).

Every year, around 19.4 million infants in the world did not get complete basic immunization and many of them did not receive immunization at all. Indonesia was the fourth-highest country with an estimated infant without immunization and infant with incomplete basic immunization (UNICEF, 2018).

The success of the complete basic immunization program was measured by the achievement of complete basic immunization coverage. Complete basic immunization coverage in Indonesia in 2018 was 90.61%, still below the Ministry of Health's Strategic Plan target which was 92.5% (Indonesian Ministry of Health, 2018). Complete basic immunization coverage of East Java Province in 2018 met the Ministry of Health's Strategic Plan target which was 96.74%. However, several districts had not achieved the target. Pacitan Regency was in the fourth rank with the lowest complete basic immunization coverage in East Java Province (East Java Provincial Health Office, 2018).

An important key to increase the complete basic immunization coverage was understanding the various factors that influence the completeness of immunization (Noh et al., 2018). Complete basic immunization status was influenced by various factors at the individual level and factors at the community level. Social Cognitive Theory (SCT) is a behavior theory that can explain factors at the individual level that affect the completeness of immunization status (Priest et al., 2015). SCT refers to the triad of reciprocal determinism, namely the reciprocal interaction between individual, environmental and behavioral factors (Bednarczyk et al., 2018). The completeness of immunization status was also influenced by social capital (Nawa et al., 2019).

Integrated Health Post provides basic health information and services for mothers, infants, and toddlers. One of the main activities of the Integrated Health Post is immunization (Indonesian Ministry of Health, 2018). Integrated Health Post was a factor at the community level that had a contextual effect on the complete basic immunization status of infants.

SUBJECTS AND METHOD

1. Study Design

This was an analytical observational study with a cross-sectional design. The study was performed in January–July 2020. The study was carried out at 25 Integrated Health Post in Pacitan district, East Java.

2. Population and Sample

The population of this study was infants aged 12–23 months that were registered at the Integrated Health Post in Pacitan district, East Java. The sample was obtained using stratified random sampling at the Integrated Health Post level, and simple random sampling at the individual level.

3. Study Variables

The dependent variable of the study was complete basic immunization status. The independent variables of the study were knowledge, self-efficacy, outcome expectations, vicarious learning, health worker support, social capital, and Integrated Health Post-strata.

4. Operational Definition of Variables

Knowledge was the mother's understanding of the complete basic immunization of the infant. The measuring instrument was questionnaires. The data scale in this study was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=low (<9.50); and 1=high (≥9.50).

Self-efficacy was the mother's belief to provide complete basic immunization to infants. The measuring instrument was ques-

tionnaires. The data scale was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=low (<9.71); and high (≥ 9.71).

The outcome expectation was the mother's assessment of the impact of the complete basic immunization of the infant. The measuring instrument was questionnaires. The data scale was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=negative (>10.8); and 1=positive (≥ 10.8).

Vicarious Learning was indirectly learning observations from others' experiences through media that contained the behavior of giving complete basic immunization to infants. The measuring instrument was questionnaires. The data scale was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=never (<2.75); and 1=ever (≥ 2.75).

Health worker support was a form of encouragement and assistance provided by health workers in the form of information, emotion, appreciation, and instrumentals. The measuring instrument was questionnaires. The data scale was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=weak (<14.79); and 1=strong (≥ 14.79).

Social capital was a characteristic of the social organization including mutual trust, association, networking, and reciprocal norms that facilitate beneficial cooperation. The measuring instrument was questionnaires. The data scale was continuous data. The data was converted into dichotomous data to facilitate the analysis. Code 0=low (<14.63); and 1=high (≥ 14.63).

Integrated Health Post strata was the level of Integrated Health Post development based on the scope of activities they had. The data scale was categorical data. Code 1=intermediate; 2=full; 3=independent.

Complete basic immunization status was the completeness of basic immunization for infants including 1 time for Hepatitis B immunization, 1 time for BCG, 3 times for DPT-HB-HiB, 4 times for polio drops, and 1 time for measles-rubella. The data scale was categorical data. Code 0=incomplete and 1=complete.

5. Data Analysis

The univariate analysis described the dependent and independent variables presented in the frequency distribution table. Bivariate analysis was to determine the relationship between independent variables and dependent variables using the Chi-Square test. Multivariate analysis used multilevel logistic regression to determine the relationship between the dependent variable and the independent variable at the individual level and the Integrated Health Post.

6. Research Ethic

This study was conducted based on research ethics, namely research approval, anonymity, confidentiality, and ethical feasibility. The Ethical permission in this study was obtained from the Ethics Commission of Dr. Moewardi, Surakarta, Indonesia, No. 070 / I / HREC / 2020.

RESULTS

1. Univariate analysis

Table 1 shows the results of the descriptive statistical test for continuous data of each independent variable including the number of research subjects, the mean, standard deviation, minimum, and maximum value of the variables.

The variable of knowledge had a mean= 9.50 with the lowest value of 7 and the highest was 12. The variable of self-efficacy had a mean= 9.71 with the lowest value of 7 and the highest was 10. The variable of outcome expectation had a mean= 2.75 with the lowest value of 8 and the highest was 12. The variable of vicarious

learning had a mean= 2.75 with the lowest value of 1 and the highest was 5. The variable of health workers support had a mean= 14.79 with the lowest value of 10 and the highest was 16. The variable of social capital had a mean= 14.63 with the lowest value of 10 and the highest was 16.

Table 2 presents a description of the results of the study on each of the variables studied. The percentage of study subjects with incomplete immunization status was 37 subjects (18.50%). The percentage of the

study subjects with complete immunization status was 163 subjects (81.50%). This showed that the immunization coverage had not reached the target of 100%. Most of the mothers with good knowledge were 124 (62%), high self-efficacy were 157 (78.50%), positive outcome expectations were 128 (64%), ever done vicarious learning were 119 (59.50%), received strong support from health workers were 152 (76%) and had high social capital 133 (66.50%).

Table 1. Description of the Characteristics of the continuous data sample

Variable	N	Mean	SD	Min.	Max.
Knowledge	200	9.50	0.99	7	12
Self-efficacy	200	9.71	0.63	7	10
Outcome expectation	200	10.8	0.95	8	12
Vicarious learning	200	2.75	0.82	1	5
Health worker support	200	14.79	1.05	10	16
Social Capital	200	14.63	1.23	10	16

Tabel 2. Description of the characteristics of the categorical data sample

Variable	Frequency	%
Complete Basic Immunization Status		
Incomplete	37	18.50
Complete	163	81.50
Knowledge		
Fair	76	38
Good	124	62
Self-efficacy		
Low	43	21.50
High	157	78.50
Outcome Expectation		
Positive	72	36
Negative	128	64
Vicarious learning		
Never	81	40.50
Ever	119	59.50
Health worker support		
Weak	48	24
Strong	152	76
Social Capital		
Low	67	33.50
High	133	66.50

Table 3. Chi-Square test of the factors that influenced the complete basic immunization status

Independent variables	Complete Basic Immunization Status				OR	p
	Incomplete		Complete			
	n	%	n	%		
Knowledge						
Fair	27	35.5	49	64.6	6.29	<0.001
Good	10	8.1	114	91.9		
Self-efficacy						
Low	25	58.1	18	41.9	16.78	<0.001
High	12	7.6	145	92.4		
Outcome Expectation						
Negative	32	44.4	40	55.6	19.68	<0.001
Positive	5	3.9	123	96.1		
Vicarious learning						
Never	23	28.4	58	71.6	2.97	0.003
Ever	14	11.8	105	88.2		
Health worker support						
Weak	25	52.1	23	47.9	12.69	<0.001
Strong	12	7.9	140	92.1		
Social Capital						
Low	28	41.8	39	58.2	9.89	<0.001
High	9	6.8	124	93.2		

2. The result of bivariate analysis

Table 3 demonstrates the results of the bivariate analysis using the Chi-Square test. There was an influence between knowledge, self-efficacy, outcome expectations, vicarious learning, health worker support, and social capital on the complete basic immunization status of infants and it was statistically significant.

Mothers with good knowledge were 6.29 times more likely to give complete immunization than mothers with less knowledge (OR= 6.29; 95% CI= 2.69 to 15.57; $p < 0.001$). Mothers with high self-efficacy were 16.78 times more likely to give complete immunization than mothers with low self-efficacy (OR= 16.78; 95% CI= 6.67 to 42.8; $p < 0.001$).

Mothers with positive outcome expectations were 19.68 times more likely to give complete immunization than mothers with negative outcome expectations (OR= 19.68; 95% CI= 6.87 to 67.88; $p < 0.001$). Mothers who had done vicarious learning were 2.97

times more likely to give complete immunization than mothers who never done vicarious learning (OR= 2.97; 95% CI= 1.35 to 6.74; $p = 0.003$).

Mothers who received strong support from health workers were 16.78 times more likely to give complete immunization than mothers who received weak support from health workers (OR= 12.69; 95% CI= 5.22 to 31.38; $p < 0.001$). Mothers with high social capital were 9.89 times more likely to give complete immunization than mothers with low social capital (OR= 9.89; 95% CI= 4.06 to 25.62; $p < 0.001$).

3. The result of multivariate analysis

Table 4 showed that mothers with good knowledge were likely to provide complete basic immunization 10.16 times higher than mothers with less knowledge (OR= 10.16; 95% CI= 1.48 to 69.98; $p = 0.019$). Mothers with high self-efficacy were 10.32 times more likely to provide complete basic immunization than mothers with low self-

efficacy (OR= 10.32; 95% CI= 2.01 to 53.13; p=0.005).

Mothers with positive outcome expectations were 10.32 times more likely to provide complete basic immunization than mothers with negative outcome expectations (OR= 20.40; 95% CI= 3.39 to 123; p= 0.001). Mothers who had done vicarious learning had could provide complete basic immunization by 4.35 times higher than mothers who had never done vicarious learning (OR= 4.35; 95% CI= 0.90 to 21.10; p= 0.068).

Mothers who received strong support from health workers could provide complete basic immunization by 14.54 times higher

than mothers who received weak support from health workers (OR= 14.54; 95% CI= 2.63 to 80.65; p= 0.002). Mothers with high social capital could provide complete basic immunization by 6.54 times higher than mothers with low social capital (OR= 6.54; 95% CI= 1.41 to 30.40; p= 0.017).

Integrated Health Post had a contextual influence with an ICC percentage of 34.15%. This meant that the Integrated Health Post had a contextual influence on the variation in the distribution of complete basic immunization which was 34.15%. This number was greater than the standard rule of thumb 8-10%.

Table 4. Multilevel logistic regression analysis of factors that affected the complete basic immunization status

Independent Variables	OR	95% CI		P
		Lower Limit	Upper Limit	
Fixed Effect				
Knowledge (good)	10.16	1.48	69.98	0.019
Self-efficacy (high)	10.32	2.01	53.13	0.005
Outcome expectation (positive)	20.40	3.39	123	0.001
Vicarious learning (ever)	4.35	0.90	80.65	0.068
Health worker support (strong)	14.54	2.63	21.10	0.002
Social capital (high)	6.54	1.41	30.40	0.017
Random Effect				
Integrated Health Post				
Var (Constant)	1.70	0.19	15.09	
n observation= 200				
n Integrated Health Post = 25				
Log likelihood = - 34.29				
LR test vs. logistic regression p=0.008				
ICC = 34.14%				

DISCUSSION

1. The effect of maternal knowledge on the complete basic immunization status of infants

The results showed that maternal knowledge affected the complete basic immunization status. Mothers with good knowledge could give complete basic immunization 10.16 times higher than mothers with low knowledge. The results of this study are in line with previous research which stated that there was a relationship between

maternal knowledge about immunization and the completeness of infant immunization (Adedire et al., 2016; Eshete et al., 2020).

Knowledge is one of the personal factors in an individual within the scope of Social Cognitive Theory. individuals with acquired knowledge could change their behavior based on what they learned. Parental behavior in immunizing children was influenced by their knowledge about

immunization. Parents who knew the benefits of immunization, a place to get immunizations, types of immunizations, and immunization schedules allowed children to get complete immunizations (Kaufman et al., 2018).

2. The effect of self-efficacy on the complete basic immunization status of infants

The results indicated that self-efficacy affected infants' complete basic immunization status. Mothers with high self-efficacy were 10.32 times more likely to provide complete basic immunization than mothers with low self-efficacy. The results of this study are in line with Bricout, et al. (2019) that self-efficacy was related to the use of herpes zoster vaccination. Febriani et al. (2018) also stated that there was a relationship between self-efficacy and the use of HPV immunization.

Self-efficacy is one of the personal factors within the individual in the scope of Social Cognitive Theory. Self-efficacy combined thoughts, beliefs, and feelings to describe individual belief in performing a behavior. Self-efficacy was an individual belief in his ability to achieve certain goals (Silveira et al., 2020). Self-efficacy referred to individual beliefs regarding their ability to carry out behavior and their ability to overcome obstacles (Hohl et al., 2019).

High self-efficacy to perform health behavior correlated with seeking health information. High self-efficacy encouraged changes in health behavior (Myrick et al., 2016). Mothers with high self-efficacy were more likely to immunize infants than mothers with low self-efficacy (Fall et al., 2017).

3. The effect of outcome expectations on the complete basic immunization status of infants

The results presented that outcome expectations affected the complete basic immu-

nization status of infants. Mothers with positive outcome expectations were 20.40 times more likely to provide complete basic immunization than mothers with negative results expectations.

The results of this study are in line with a study by Donkers et al. (2015) regarding MMR booster immunization, which stated that outcome expectations were related to students' desire to get MMR booster vaccination. Students who had positive outcome expectations about the benefits of MMR booster immunization were likely to receive vaccination by 2.80 times compared to students with negative outcome expectations.

Outcome expectation is an individual personal factor within the scope of Social Cognitive Theory. Outcome expectation was an assessment of the consequences of behavior both physically and socially (Glanz et al., 2015). Outcome expectations affected individual motivation to perform a behavior (Reisi et al., 2016). Outcome expectations were reflected in how individuals perceive the effectiveness and expected benefits of a behavior (Viser et al., 2016).

Outcome expectations were influenced by the environment in which the individual grows. Positive outcome expectations could increase behavior whereas negative outcome expectations could decrease behavior (Murti, 2018). Individuals who noticed that immunization had a positive impact would try to get immunizations (Mesch et al., 2019). Outcome expectation was a factor that influenced an individual's intention to get immunization (Viser et al., 2016).

4. The effect of vicarious learning on the complete basic immunization status of infants

The results showed that vicarious learning affected the complete basic immunization status of infants. Mothers who had done vicarious learning could provide complete

basic immunization by 4.35 times higher than mothers who have never done vicarious learning. The results of this study are in line with a study conducted by Haydarov et al. (2015) that vicarious learning was related to parental behavior in giving immunizations to children.

Vicarious learning is a social environmental factor in the scope of Social Cognitive Theory. Vicarious learning is an individual learning process by observing role model behavior through the media. Role model experience was a determinant of whether the behavior will be imitated (Martins et al., 2016). Vicarious Learning is a way of learning a behavior from the experiences of others as a role model through television, videos, or books that perform this behavior (Murti, 2018). Role model behavior observed by individuals could develop rules to guide subsequent behavior (Nabi et al., 2017). Vicarious learning occurred when individuals learnt that role models had a positive impact on behavior (Ledoux et al., 2017).

Vicarious learning was effective in helping individuals personalize health problems, identify and internalize the health information presented. Vicarious learning has a positive impact on individual health behavior (Rodriguez et al., 2018). Vicarious learning affected the complete basic immunization status in infants.

5. The effect of health worker support on the complete basic immunization status of infants

The results implied that the support of health workers affected the complete basic immunization status of infants. Mothers who received strong support from health workers were more likely to provide complete basic immunization by 14.54 times higher than mothers who received weak support from health workers. The results of this study are in line with the study carried

out by Zaitun et al., (2019) that there was an influence between the support of health workers and the complete basic immunization status of infants.

The support of health workers is a factor from the social environment that is within the scope of Social Cognitive Theory. The health workers, especially midwives, were an important source of information in providing education related to child immunization since pregnancy. Parent interactions with health workers were an important determinant of parents' attitudes about immunization. Effective interactions could provide motivation and solve problems for parents who were still hesitant about giving immunizations to children (Atwell et al., 2019).

Communication between health workers and parents was a key factor in parental decision making to immunize children (Opel et al., 2015). Health worker support was not only in the form of information support but also emotional, rewarding, and instrumental support. All forms of support from health workers increased the possibility of mothers to completely immunize their children.

6. The effect of social capital on the complete basic immunization status of infants

The results presented that social capital affected the complete basic immunization status of infants. Mothers with high social capital were more likely to provide complete basic immunization 6.54 times higher than mothers with low social capital.

The results of this study are supported by the study conducted by Rönnerstrand (2014) on social capital and immunization A (H1N1) that there was a significant relationship between social capital and immunization A (H1N1). Hasan et al. (2020) also argued that social capital, especially

social cohesion, was related to the completeness of immunization.

Social capital referred to characteristics of social organization such as belief norms, and networks that facilitate beneficial collective action. High social capital was characterized by a thriving social life, high levels of participation, broad norms of trust and reciprocity (Rönnerstrand, 2014). Social capital was a social network resource that facilitated the flow of health information and could influence individuals to make health decisions (Hernandez et al., 2019).

Mothers who tended to participate in local organizations could expand social contacts so that health services were easy to access. Social capital could determine how organizational networks in society affected maternal and child access to medical care and immunization (Vikram, 2018). Positive messages about immunization could be conveyed well in the community so that trust and vaccine users could increase (Ozawa et al., 2016)

7. The contextual effect of integrated health post on the infant complete basic immunization status of infants

The results showed that the Integrated Health Post strata influenced the variation in the provision of complete basic immunization with ICC by 34.15%. This figure shows that 34.15% of the variation in providing complete basic immunization was determined by variables at the Integrated Health Post level so that the contextual effect of Integrated Health Post on multilevel analysis was very important to notice. The results of this study are in line with the study conducted by Erynda et al., (2020) that Integrated Health Post had a contextual effect in providing complete basic immunization.

Integrated Health Post is a community empowerment facility managed by the community together with local governments to provide basic health services. The main activities in the Integrated Health Post included maternal and child health, immunization, family planning, and the prevention of diarrhea. Integrated Health Post was very beneficial for the community in obtaining basic health information and services and efficiency in obtaining integrated basic services (Ministry of Health, 2012).

The village midwife program provides immunization and other health services through the Integrated Health Post network. Cadres assist village midwives in distributing information and use a personal approach to invite mothers to participate in immunizations. Integrated Health Post made it easier for people to access immunization. Good coordination between health centers and the Integrated Health Post was effective in increasing the coverage of complete basic immunization (Holipahet et al., 2018). Integrated Health Post had a contextual effect on immunization (Inayati et al., 2019; Rosadi et al., 2019).

AUTHOR CONTRIBUTION

Puspita Mayangsari Prabowo was the main researcher who designed the study, collected data, and analyzed the data. Setyo Sri Rahardjo advised on the study and the writing techniques. Eti Poncorini Pamungkasari gave directions in the interpretation of the data.

CONFLICT OF INTEREST

There was no conflict of interest in this study.

FUNDING AND SPONSORSHIP

This study used personal fund from the main researcher.

ACKNOWLEDGEMENT

We would like to thank the midwives and the cadres of the Integrated Health Post who gave permission and the study subjects who contributed to this study.

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