

Factors Affecting the Completeness of Basic Vaccination for Toddlers

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ABSTRACT

Introduction : Vaccination is an effective way to reduce infant mortality. It can also prevent some infectious diseases and reduce disability rates in infants. Although vaccination has been proven to be a vital public health effort, its coverage has not yet reached the predetermined target of the Ministry of Health's Strategic Plan.

Objectives : actors influencing mothers' intention to get their babies vaccinated are education, knowledge, age, support, attitude, and distance. This research aims to analyze factors affecting the completeness of basic vaccination for toddlers.

Methods : This analytical study used a survey method with a retrospective approach. Data were collected by distributing questionnaires. Data analysis covered univariate and bivariate analyses using the Chi-square. The population in this study was mothers with toddlers aged 12-24 months. The total sampling size was 165 mothers.

Results : The results showed that around 160 (97%) mothers completed their toddlers' basic vaccination, while the other 5 mothers (3%) did not complete their toddlers' vaccination. Education ($p=9.992$), occupation ($p=9.746$), knowledge ($p=0.890$), support ($p=0.764$), attitude ($p=0.095$), and distance ($p=2.354$) did not influence the completeness of vaccination. However, age ($p=0.004$) influenced the completeness of basic vaccination for toddlers.

Conclusions : It can be concluded that age influences the completeness of basic vaccination for toddlers with a value of ($p=0.004$).

Introduction

Current health development focuses on promotive and preventive efforts, without neglecting curative and rehabilitative aspects. Vaccination programs have become one of the preventive efforts implemented in Indonesia (Indonesian Health Profile, 2022). This government's effort aims to reduce infant mortality rates, which is part of the Sustainable Development Goals (SDGs). One of the main indicators for determining public health is the infant mortality rate. The SDGs target by 2030 is to end preventable newborns and under-five deaths, where all countries are striving to reduce the infant mortality rate by 12 per 1,000 live births and the under-five mortality rate by 25 per 1,000 live births.

The World Health Organization (WHO) stated in 2021 that approximately 25 million children worldwide have not received complete immunizations, some even not at all. This data represents 5.9 million more than in 2019. Pneumonia accounts for approximately 18% of total deaths in children under five, while diarrhea accounts for approximately 9% (WHO, 2022). Immunization is estimated to save more than 32 million lives between 2020 and 2030, with approximately 28 million of these being children under five (Elsland et al., 2021). Education, knowledge, and maternal occupation are some of the contributing factors that influence immunization completeness (Meilani, 2020). Incomplete immunization status will make children susceptible to disease, thus making parents spend a lot of money because babies whose immunizations are incomplete will have less immunity and make babies susceptible to illness, so parents will spend a lot of money on treatment (R. Marmi, 2018).



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Vaccination is a process that stimulates or enhances an infant's immunity to a disease, so when exposed to the disease, they will not become ill or experience only mild illness. Indonesia's Infant Mortality Rate (IMR) was targeted to be below 16 per 1,000 live births by 2024. The Ministry of Health reported that the recorded IMR in 2023 reached 17.00, lower than the 2022 IMR, which reached 17.5 per 100 live births (Ministry of Health of the Republic of Indonesia, 2024).

Health Law Number 36 of 2009 states that every child has the right to receive basic vaccination in accordance with regulations. Vaccination can help prevent diseases. The government is obliged to provide complete vaccination to every infant and child as stipulated in Minister of Health Regulation Number 12 of 2017, enacted on April 11, 2017 (Ministry of Health Regulation, 2017). Vaccination is an effective effort to reduce infant mortality, and it has been proven to be a vital public health measure. This program demonstrated remarkable success and is a highly cost-effective way to prevent infectious diseases (SDKI, 2017). Vaccination provides immunity against vaccine-preventable diseases (VPDs), for example, tuberculosis, diphtheria, tetanus, hepatitis B, pertussis (whooping cough), measles, rubella, polio, meningitis, and pneumonia. Without vaccination, these diseases can result in disability or even mortality. This most cost-effective health intervention can prevent and reduce the incidence of illness, disability, and mortality from VPD3I, which is estimated to reach 2 to 3 million deaths annually (SDKI, 2017).

Puskesmas Puring is an area in Kebumen District with a vaccination coverage reaching 90%. Researchers interviewed six mothers who have toddlers in the working area of Puskesmas Puring. The researcher proposed 10 questions related to vaccination, for example, the benefits, objectives, schedule, impact, and importance of providing complete basic vaccination for infants before they are one year old. Two of the six mothers reported poor knowledge, but four mothers had good knowledge of vaccination. Concerning challenges in getting vaccinated, working mothers reported having no time to take their babies to health facilities, and families did not remind them about the vaccination schedules.

This research aims to identify factors influencing the completeness of basic vaccination for toddlers in Puring Sub-district.

Methods

This research used an analytical survey method with a retrospective approach. In this case, effects and risk factors are respectively identified for their occurrence in the present and in the past. The population in this study was mothers of toddlers aged 12-24 months. The sample size was taken by total sampling, sample size was 165 mothers. The inclusion criteria in this study were: mothers who have toddlers aged 12-24 months, are physically and mentally healthy, have a KIA book, and are willing to be respondents. Exclusion criteria: uncooperative mothers. The research is located in the working area of Puskesmas Puring. Data were collected by distributing questionnaires to respondents. Vaccination data were taken from the KIA Book (Mother and Child Health Book). Data analysis covered univariate and bivariate analyses using the Chi-square. The results of univariate analysis were presented in frequency distribution tables, graphs, and statistical measures.

Results

Table 1. Respondent Characteristics



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Characteristics	Number	%
Age		
20-35 years old	130	78.79
>35 years old	35	21.21
Education level		
Elementary School	22	13.3
Junior High School	73	44.24
Senior High School	59	35.76
University	11	6.67
Occupation		
Housewives	153	92.73
Farmer	3	1.82
Self-employed	3	1.82
Employee	6	3.64
Knowledge		
Low	38	23.03
Moderate	93	56.36
High	34	20.61
Support		
Good	126	76.36
Poor	39	23.64
Attitude		
Good	162	98.18
Poor	3	1.82
Distance		
<1 km	108	65.45
1-4 km	49	29.70
>4 km	8	4.85

Table 1 shows that most mothers were aged 20-35 (130 mothers, 79.79%), had graduated from junior high school (73 mothers, 44%), and were housewives (153 mothers, 92.73%). Factors influencing vaccination completeness were moderate knowledge (93%, 56.36%), good support (126 mothers, 76.36%), good attitude (162 mothers, 98.18%), and distance < 1 km (108 mothers, 65.45%).

Tabel 2. Results of Bivariate Analysis

Characteristics	Vaccination status		P
	Complete	Incomplete	
Age			
20-35 years old	126 (76.36)	4 (2.42)	0.004
>35 years old	34 (20.6)	1 (0.6)	
Education level			
Elementary School	22 (13.33)	0	9.992
Junior High School	72 (43.5)	1 (0.06)	



Senior High School	57 (34.5)	2 (3.07)	
University	9 (5.45)	2 (3.06)	
Occupation			
Housewives	149 (90.3)	4 (2.42)	
Farmer	2 (1.21)	1 (0.6)	9.746
Self-employed	3 (1.81)	0	
Employee	6 (3.64)	0	
Knowledge			
Low	36 (21.8)	2 (1.21)	
Moderate	91 (55.1)	2 (1.21)	0.890
High	33 (20)	1 (0.6)	
Support			
Good	123 (75.5)	3 (1.81)	0.764
Poor	37 (22.42)	2 (1.21)	
Attitude			
Good	157 (95.1)	5 (3.03)	0.095
Poor	3 (1.81)	0	
Distance			
<1 km	106 (62.24)	2 (1.21)	
1-4 km	46 (27.8)	3 (1.81)	2.354
>4 km	8 (4.84)	0	

Table 2 shows that age influences the completeness of basic vaccination in infants with a p-value of 0.004. Meanwhile, education level ($p=9.992$), occupation ($p=9.746$), knowledge ($p=0.890$), support ($p=0.764$), attitude ($p=0.095$), and distance ($p=2.354$) do not influence the completeness of basic vaccination in infants.

Discussion

Effects of Maternal Age on Completeness of Basic Vaccination

Maternal age influences the completeness of basic vaccination in infants. The older a mother gets, the higher the level of development in thinking about childcare and disease prevention, including through vaccination. Moreover, the older a mother gets, the more experience in childcare. This impacts their behavior (Holipah et al., 2018). Furthermore, the older a person gets, the higher the maturity and ability to think and absorb information. Therefore, older mothers tend to have more experience than younger mothers. This also influences their motivation in making decisions about getting vaccinations for their children. Thus, maternal age becomes the most important factor influencing mothers' intention to get complete vaccination for their toddlers.

The results of this study contradict a previous study by Harmasdiyani (2015) that maternal age did not affect non-compliance with immunizations. Moreover, another study by Hudhah and Hidajah (2018) found no relationship between maternal age and children's vaccination (Hudhah & Hidajah, 2018). Based on the research results, researchers assume that a person's age significantly influences decision-making. Older respondents tend to have more experience and more mature thinking, which leads mothers to be more likely to improve their children's health by providing their babies with complete immunizations.

Effects of Maternal Education on Completeness of Basic Vaccination



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In terms of education level, the maternal education variable had no significant influence on completeness of basic vaccination. The majority of respondents were junior high school graduates, with more toddlers receiving complete basic vaccination, and only 11 university graduates whose toddlers have complete vaccination. Two respondents had infants with incomplete basic vaccination status. Education levels did not influence knowledge of the importance of basic vaccination. This indicates that respondents' knowledge about basic vaccination is obtained from health education provided by local health workers. This finding is in line with a previous study by Triana (2015) that education level does not significantly influence complete basic vaccination for toddlers in Kuranji Sub-district, Padang City. This is also supported by Arda et al (2018), who found that maternal education did not significantly influence the completeness of basic vaccination status in infants (Arda et al., 2018).

The results of this study are in line with research conducted by Feeling, P and Noordina, S.P (2024) which stated that education is not related to the completeness of basic infant immunizations. Based on the results of this study, it can be assumed that a person's education is hard to intervene in. Respondents who have a high, medium, or low level of education cannot be assured that they have carried out good actions in accessing complete vaccination.

Effects of Maternal Occupation on Completeness of Basic Vaccination

The analysis of the occupational variable revealed no relationship between occupation and the completeness of basic vaccination. This finding is in line with a previous study by Arda (2018) that occupation does not significantly influence the provision of complete basic vaccination. This is also in line with Husaini (2016), who found that maternal occupation had no effect on the provision of complete basic vaccination at Runding Puskesmas in Subulussalam City.

Housewives and working mothers showed the same concern for the completeness of basic vaccination. As described earlier, the majority of mothers were housewives. Working respondents completed their babies' immunizations once their work was completed, or delegated someone else to attend the immunization service. Based on the research results, researchers assumed that a person's occupation had no impact on the completeness of their infant's immunizations. Both unemployed and employed respondents were able to provide immunization services for their children. Respondents who provided immunizations had either finished their work or could delegate someone else to attend the immunization service.

Effects of Maternal Knowledge on Completeness of Basic Vaccination

Based on the results of the study, the majority of respondents had moderate knowledge. Knowledge can change a person's mindset regarding the issue of completeness of immunizations. The higher the respondent's level of knowledge, the greater their awareness of the need for complete basic vaccination. This finding is inconsistent with Maemunah (2023) that maternal knowledge had a positive influence on the completeness of basic vaccination at Dewi Sartika Posyandu in Malang. This is also in line with Maryani and Sulastris (2009) that maternal knowledge influenced the completeness of vaccination.

Effects of Maternal Support on the Completeness of Basic Vaccination

The results of this study indicate no relationship between support and the completeness of basic vaccination. This finding is inconsistent with Irfani (2010), who states that family support is a supporting factor for a person in carrying out certain actions. Someone who receives support from their family will feel comfortable in taking action, both physically and psychologically. This support can be in the form of information, attention, assistance, or expressed appreciation. Good family support will facilitate a person's decision-making, including completing vaccination for toddlers.

Effects of Maternal Attitudes on the Completeness of Basic Vaccination

The results of this study indicate no relationship between attitude and the completeness of basic vaccination in infants. This is in line with Irfani (2010) that there is no significant influence



between attitudes and complete basic vaccination in Tanjung Beringin Sub-district, Serdang Bedagai District. This finding contradicts a previous study by Maemunah (2023) that attitudes positively influenced the completeness of basic vaccination for infants at the Dewi Sartika Posyandu in Malang City. Complete vaccinations are influenced by mothers' positive attitudes toward vaccination.

A mother's attitude is a response formed based on their knowledge, feelings, and beliefs about something. In this case, a mother's attitude toward basic vaccination will influence their decision to get or delay vaccination for their child (Dillyana, T.A. 2019). It is assumed that a mother's positive attitude does not influence the completeness of vaccination. Cultural factors can also influence mothers' decisions about getting vaccinations for their children.

Effects of Distance on the Completeness of Basic Vaccination

The results showed that distance did not affect vaccination completeness, with a p-value of 3.254. A total of 106 respondents (64.5%) had close distances (<1 km) and complete basic vaccination status, while 2 other respondents (1.21%) had incomplete vaccination status. Distance had no relationship with the completeness of basic vaccination. The observations and interviews with respondents regarding the distance to health services revealed that most respondents answered close or moderate. This is supported by the fact that the working area of Puskesmas Puring has good road access and the availability of public transportation. Therefore, it is easy for respondents to visit health services to complete their toddler's basic vaccination. The results of the study indicate that there is no difference in distance (close, moderate, and far) to health services in terms of the completeness of basic vaccination.

The finding is in line with a previous study by Julinar, Isfanda, & Raidatul (2018) with a p-value of 0.054. The results of this study did not indicate a relationship between distance and vaccination status. This may be because most mothers travel a relatively short distance to vaccination services. Puskesmas, through its posyandu program in every village, also plays a significant role, allowing communities to access vaccination services. Therefore, it can be said that the distance required to access health services does not influence respondents' perceptions of the completeness of basic vaccination for toddlers.

Based on the research results, researchers assumed that distance was not a barrier to providing healthcare services to their children. Respondents who lived close, moderate, or far away could not be guaranteed to be taking the correct steps to ensure their children were fully immunized.

Conclusion

Maternal age influences the completeness of basic vaccination in infants ($p=0.004$). Future research needs to examine the influence of culture on vaccination status.

Ethics approval and consent to participate

Ethics Committee of Health Research, Muhammadiyah Gombong University. Description of "Ethical Exemption" No. 068.6/II.3.AU/F/KEPK/III/2021

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