



## DETERMINANT ANALYSIS RELATED TO BASIC BCG IMMUNIZATION STATUS IN INFANTS

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### ABSTRACT

Immunization is an effort to actively create/increase a person's immunity to a certain disease. BCG immunization is given immediately after the baby is born or before the age of 1 month. BCG immunization can reduce the risk of severe tuberculosis. TB is an infectious disease caused by infection with Mycobacterium Tuberculosis bacteria, which can spread through the droplets of people who have been infected with TB bacilli. This study aims to determine the factors associated with the status of basic BCG immunization in infants. This study is a quantitative study using a cross-sectional design.. The population in this study consists of all infants aged 2-12 months in the working area of the Kalumpang Community Health Center in Ternate City, totaling 167 infants, with a sample size of 118 respondents. The sampling technique used is simple random sampling. We collected the data using questionnaire. The statistical test used is the chi-square test, and the analysis performed includes univariate and bivariate analysis. Based on the results obtained as many as 52 (44.1%) respondents were not given BCG immunization, as many as 40 (33.9%) respondents had poor knowledge, as many as 53 (44.9%) respondents with negative attitudes as many as 76 (64.4%) respondents with working status and as many as 45 (38.1%) respondents stated that the family did not support. The results of bivariate analysis showed that there was a relationship between knowledge with a p value of 0.000, attitude with a p value of 0.000, work with a p value of 0.000 and family support with a p value of 0.001. The conclusion is that there is a relationship between factors associated with basic BCG immunization status.

Keywords: attitude; BCG; family; knowledge; work

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## INTRODUCTION

Immunization is an effort to actively induce or enhance a person's immunity against a specific disease, so that if they are exposed to the disease in the future, they will not get sick or will only experience mild illness. Some infectious diseases that fall under the category of Vaccine-Preventable Diseases (VPDs) include tuberculosis (TB), diphtheria, tetanus, hepatitis B, pertussis, measles, polio, meningitis, and pneumonia. Children who have been immunized will be protected from these dangerous diseases, which can cause disability or death. Immunization is one of the most cost-effective health interventions, as it can prevent and reduce illness, disability, and death caused by VPDs, which are estimated to result in 2 to 3 million deaths annually (Ministry of Health of the Republic of Indonesia, 2017).

In 2019, there were still children in Indonesia who had not received complete immunization, especially the BCG vaccine, and even some children who had never received any immunization since birth. It is estimated that around 1.7 million children had not received immunization or had incomplete immunization status, particularly BCG immunization. Children who have received the BCG vaccine will be protected from dangerous diseases, particularly TB, which can cause illness, disability, and death (Ministry of Health, 2017). By administering the BCG vaccine to infants, the likelihood of transmitting the virus or bacteria

that cause tuberculosis can be reduced (Ministry of Health of the Republic of Indonesia, 2019). BCG immunization is given immediately after birth or before the infant reaches one month of age (IDAI, 2020). The BCG vaccine (Bacillus Calmette-Guérin) can reduce the risk of severe tuberculosis. TB is an infectious disease caused by *Mycobacterium tuberculosis* bacteria, which can spread through droplets from individuals already infected with TB bacilli.

A study by Faltwiany (2022) explains that a mother's role in immunization programs is crucial, as understanding the program is necessary for this group. A mother's knowledge about immunization is influenced by many factors. In determining attitudes toward immunization, knowledge level, way of thinking, beliefs, and emotions play an important role. In her study, it was observed that among mothers with infants at the Hanafiah Clinic, 50% were aged 26-30 years, 25% had a junior high school education, and 50% were housewives. While 57.5% had good knowledge, 90% had a positive attitude toward BCG immunization (Faltwiany, 2022).

A study by Sari et al. (2022) states that many families provide limited information about immunization for infants due to a lack of knowledge and support. Several efforts are needed to improve family support for mothers in obtaining infant immunization, such as involving family members in providing an understanding of the benefits of immunization. With increased family support, immunization compliance for infants will improve, as families will encourage mothers to provide timely immunization for their children (Sari, 2022).

According to a preliminary survey, there is still varying understanding of immunization in society, resulting in many infants not receiving immunization services. Some reasons given by parents include fear of side effects, frequent illness, family disapproval, lack of awareness about immunization locations, as well as myths and cultural beliefs within the community. Additionally, fear of side effects is a common concern among parents. Furthermore, 6 out of 10 mothers surveyed were working, meaning they had to balance work responsibilities with childcare, which led to immunization not being a priority. Therefore, the purpose of this study was to determine the factors associated with the status of basic BCG immunization in infants.

## **METHOD**

This study is a quantitative study using a cross-sectional design. The population in this study consists of all infants aged 2-12 months in the working area of the Kalumpang Community Health Center in Ternate City, totaling 167 infants, with a sample size of 118 respondents. The sampling technique used is simple random sampling. In this method, each member of the population has an equal chance of being selected as a sample. The statistical test used is the chi-square test, and the analysis performed includes univariate and bivariate analysis.

## **RESULT**

Table 1 shows that of the 118 respondents who were the research sample, 52 (44.1%) respondents were not given BCG immunization, while 66 (55.9%) respondents were given BCG immunization. For the frequency distribution of knowledge, it is known that as many as 40 (33.9%) respondents have knowledge and as many as 78 (66.1%) respondents have knowledge of return. For the distribution of attitude frequency, it was known that as many as 53 (44.9%) respondents had a negative attitude and as many as 65 (55.1%) respondents had a positive attitude. For the distribution of work frequency, it is known that as many as 76 (64.4%) respondents with working status while as many as 42 (35.6%) respondents with non-working status. For the distribution of the frequency of family support, it is known that as many as 45 (38.1%) respondents stated that their families do not support while as many as 73 (61.9%) respondents stated that their families are supportive.

Table 1.  
Characteristics Respondents

| Variable         | f  | %    |
|------------------|----|------|
| BCG Immunization |    |      |
| No               | 52 | 44.1 |
| Yes              | 66 | 55.9 |
| Knowledge        |    |      |
| Low              | 40 | 33.9 |
| High             | 78 | 66.1 |
| Attitude         |    |      |
| Negatif          | 53 | 44.9 |
| Positif          | 65 | 55.1 |
| Working          |    |      |
| Yes              | 76 | 64.4 |
| No               | 42 | 35.6 |
| Family Support   |    |      |
| No               | 45 | 38.1 |
| Yes              | 73 | 61.9 |

Table 2 shows the proportion of respondents with poor knowledge about BCG immunization whose infants were not immunized, which amounted to 37 respondents (92.5%). This proportion is higher compared to respondents with good knowledge about BCG immunization whose infants were not immunized, which was 15 respondents (19.2%). The proportion of respondents with a negative attitude toward BCG immunization whose infants were not immunized was 36 respondents (67.9%), which is higher compared to the proportion of respondents with a positive attitude whose infants were not immunized, which was 16 respondents (24.6%). The proportion of working respondents whose infants were not immunized with BCG was 44 respondents (57.9%), which is higher than the proportion of non-working respondents whose infants were not immunized, which was 8 respondents (19%). The proportion of respondents without family support whose infants were not immunized with BCG was 29 respondents (64.4%), while the proportion of respondents with family support whose infants were not immunized was 23 respondents (31.5%).

Table 2.  
Factors Associated with BCG Immunization for Infants

| Variable       | BCG Immunization |       | Total | P-value |
|----------------|------------------|-------|-------|---------|
|                | No               | Yes   |       |         |
| Knowledge      |                  |       |       |         |
| Low            | 37               | 3     | 40    | 0,000   |
| High           | 92,5%            | 7,5%  | 100%  |         |
| Attitude       | 19,2%            | 80,8% | 100%  | 0,000   |
| Negatif        |                  |       |       |         |
| Positif        | 36               | 17    | 53    | 0,000   |
| Working        | 16               | 49    | 65    |         |
| Yes            | 24,6%            | 75,4% | 100%  | 0,000   |
| No             |                  |       |       |         |
| Family Support | 57,9%            | 42,1% | 100%  | 0,000   |
| No             | 8                | 34    | 42    |         |
| Yes            | 19,0%            | 81,0% | 100%  | 0,000   |
| Knowledge      |                  |       |       |         |
| Low            | 29               | 16    | 45    | 0,000   |
| High           | 64,4%            | 35,6% | 100%  |         |

## **DISCUSSION**

### **The Relationship Between Knowledge and BCG Immunization Administration in Infants**

Based on the analysis results, the data showed that out of 118 respondents, 40 (33.9%) had poor knowledge, while 78 (66.1%) had good knowledge. The statistical test results obtained a p-value of 0.000, meaning there is a significant relationship between knowledge and the administration of BCG immunization in infants. This was similar with a study conducted in rural Nigeria found a particularly strong correlation between full immunization and the mother's knowledge of immunization (Kibreab et al., 2020). Awareness and education of parents regarding vaccine-preventable diseases by the healthcare system and the governing bodies can lead to a higher successful immunization rate (Saeed and Hashmi, 2021).

In this study, it was found that 37 respondents (92.5%) with poor knowledge did not administer BCG immunization to their infants. According to the researchers' assumptions, some parents did not administer BCG immunization due to a lack of knowledge about its importance. They were unaware that BCG immunization could protect infants from tuberculosis (TB) and its complications. Additionally, myths or misinformation about BCG immunization side effects might influence parental decisions. Some parents may have heard negative stories about reactions that could occur after immunization, such as fever, causing them to fear giving the vaccine to their infants.

To address this issue, health centers can conduct regular education campaigns on BCG immunization through seminars, workshops, or short discussions. These campaigns can provide important information about the benefits of BCG immunization, possible side effects, and the necessity of administering it to infants. Utilizing social media to spread information about BCG immunization can also be beneficial. Health centers can create short videos or infographics that can be shared with the community.

### **The Relationship Between Attitude and BCG Immunization Administration in Infants**

Based on the analysis results, the data showed that out of 118 respondents, 53 (44.9%) had a negative attitude, while 65 (55.1%) had a positive attitude. The statistical test results obtained a p-value of 0.000, indicating a significant relationship between attitude and the administration of BCG immunization in infants. This was supported by study which stated that a person's attitude toward infant immunization is positively associated with their likelihood of vaccinating their child. This relationship is also influenced by other factors, such as the quality of the vaccination service and public opinion (Gebreyesus et al., 2021).

In this study, it was found that 36 respondents (67.9%) with a negative attitude did not administer BCG immunization to their infants. According to the researchers' assumptions, these respondents had a negative perception of the safety and effectiveness of BCG immunization. They might believe that the risks outweigh the benefits or doubt its effectiveness in preventing disease. Cultural or religious beliefs could also influence attitudes toward immunization. If respondents' cultural or religious backgrounds include views that contradict immunization, a negative attitude is likely to emerge. Additionally, negative experiences or stories from friends, family, or social groups can shape negative attitudes, making parents hesitant to immunize their children. To address this issue, health centers can involve respected community leaders in every BCG immunization counseling session, as their influence and credibility can help persuade respondents.

## **The Relationship Between Employment Status and BCG Immunization Administration in Infants**

Based on the analysis results, the data showed that out of 118 respondents, 76 (64.4%) were employed, while 42 (35.6%) were unemployed. The statistical test results obtained a p-value of 0.000, indicating a significant relationship between employment and BCG immunization administration in infants. This finding aligns with the results of a study conducted by Maryam et al. (2021), which found a significant relationship between employment and BCG immunization administration at Sembawa Health Center, with a chi-square test p-value of  $0.013 < 0.05$ . This suggests that employment status can create health-related challenges for mothers and family members, as work commitments may limit the time available for childcare. Wiltshire as cited in Meisarti (2021), defines work/employment as a dynamic concept with various synonyms and definitions.

## **CONCLUSION**

This study shows that the relationship between the alntal is significant, the alntal, the worker, the alntal is the same as the BCG immunization of the paldal balyi. In fact, the person who has a positive immune system, who is positive for immunization, who is able to get a vaccine from the vaccine, and who is also a good student, is more likely to provide BCG immunity to the immune system. This hall emphasizes the importance of education in social dukungaln dallalm menangkalkupaln immunization BCG paldal population balyi. It is possible to increase the informality of the immune system, as well as to increase the number of cases of the immune system, as well as to increase the level of the disease of BCG immunization.

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