



## Assessment of Complete Immunization Coverage in Infants Aged 0-12 Months

Liananiar Liananiar<sup>1\*</sup>, Yuswita Yuswita<sup>2</sup>, Nuraina Nuraina<sup>3</sup>, Yulia Ernida<sup>4</sup>,  
Anna Malia<sup>5</sup>, Siti Rahmah<sup>6</sup>

<sup>1,3,5</sup>Midwifery Professional Education Study Program, Faculty of Health,  
Universitas Almuslim

<sup>2,4</sup>Bachelor of Midwifery Study Program, Faculty of Health, Universitas Almuslim

<sup>6</sup>Diploma III Midwifery Study Program, Faculty of Health, Universitas Almuslim

Corresponding Author: [liananiar02@gmail.com](mailto:liananiar02@gmail.com)\*

**Abstract.** Achievement of Complete Basic Immunization (IDL) in eleven Indonesian provinces in 2022 is still below the national target of 90%. The eleven provinces in question are West Sulawesi, Southeast Sulawesi, Maluku, East Nusa Tenggara, North Kalimantan, Riau, West Kalimantan, West Papua, West Sumatra, Papua and Aceh. The type of research used in this research is descriptive observational research. The data used in this study is secondary data, namely monthly reports on the results of routine immunizations for babies. It was found that the majority of basic immunization coverage for babies born in January 2022 was higher than for babies born in January 2023. Coverage for basic immunization types for babies was highest in 2022. (73.3%) was obtained from Hepatitis B, BCG, and Polio 1 immunization. The highest coverage of basic types of infant immunization in 2023 was obtained from Hepatitis B immunization (73.3%). Hepatitis B immunization received a high score for babies born in January 2022. Coverage of basic immunization types for babies born in January 2022 for types DPT-HB-Hib 1, 2, 3, Polio 2, 3, 4, received 36.7% -73, 3%, and Measles-Rubella got 33.3%. The frequency of immunization against PVC-1 (23.3%), RV-1 (6.7%), and IPV-1 (13.3%) is still low due to not visiting posyandu and giving immunizations past the immunization deadline. The average value of basic immunization coverage for babies born in January 2023 (10%) is lower than babies born in January 2022 (43.3%) with a difference of 33.3%.

**Keywords:** Babies 0-12 months, Basics, Immunization

### 1. INTRODUCTION

Since May 2012, the World Health Organization (WHO) has initiated World Immunization Week which is celebrated every 4th week of April (24 – 30 April). To date, World Immunization Week has been implemented by more than 180 countries through various activities. Based on WHO data in 2021, as many as 25 million children did not receive complete immunization at the global level. This data shows 5.9 million more than in 2019 and the highest number since 2009. Meanwhile in Indonesia, the number of children who have not been fully immunized from 2017 to 2021 is 1,525,936 children. (1)

Based on annual reports Directorate of Health Surveillance and Quarantine in 2017, the indicator for the percentage of babies aged 0-11 months who received complete basic immunization in 2017 exceeded the set target. From the target of 92%, a result of 92.04% has been achieved, so the percentage of performance achievement is 100%. Meanwhile, the indicator for the percentage of children aged 12-24 months who received advanced DPT-HB-Hib immunization in 2017, from the target of 45%, has achieved a result of 56.5%. However,

it is very unfortunate that during 2017 too, *Diphtheria outbreak* occurred in 170 districts/cities and in 30 provinces, with a total of 954 cases, with 44 deaths.

Meanwhile, in 2018 (until January 9 2018), there were 14 case reports from 11 districts/cities in 4 provinces (DKI, Banten, West Java and Lampung), and there were no deaths. In 2018, there were no additional regencies/cities that reported diphtheria outbreaks. The latest data shows that there are 85 districts/cities out of a total of 170 districts/cities that have not reported any new cases. That means the outbreak in the 85 City Districts can be said to be over. Immunization has been proven to prevent and reduce the incidence of illness, disability and death due to PD3I (Diseases that can be prevented by immunization), which is estimated at 2 to 3 million deaths each year. Measles immunization coverage in Indonesia is 84% and is a country in the medium category. Basic Health Research data for 2018 shows that Complete Basic Immunization (IDL) coverage reached 57.9%, incomplete immunization was 32.9% and 9.2% were not immunized. (2)

Immunization is an effort to stimulate the mother's immunological system to form specific antibodies or (immunity) so that it can protect the body from disease attacks that can be prevented by VPD immunization. The process of forming antibodies to fight antigens naturally is called natural immunization, while the immunization program through administering vaccines is an effort to stimulate the body's immune system to produce antibodies in an effort to fight disease by immobilizing weakened antigens originating from vaccines. Meanwhile, what is meant by vaccine is the material used to stimulate the formation of antibody substances which are inserted into the body through injections such as BCG, Hepatitis, DPT, Measles vaccines, and by mouth such as Polio.

Immunization is very important for babies because it can prevent several diseases such as Tuberculosis, Diphtheria, Pertussis, Hepatitis and Poliomyelitis or commonly known as Diseases that Can Be Prevented by Immunization (VPD). The immunization program in Indonesia is regulated by the Ministry of Health of the Republic of Indonesia which is responsible In placing targets, the number of immunization recipients, age groups and procedures for administering vaccines to targets are determined based on the Regulation of the Minister of Health of the Republic of Indonesia Number: 42/Menkes/SK/VI/2013 concerning the implementation of immunization, stating that immunization is an effort to cause or actively increasing a person's immunity against a disease, so that if one day they are exposed to the disease they will not get sick or only experience mild illness. (4)

Achievement of Complete Basic Immunization (IDL) in eleven Indonesian provinces in 2022 is still below the national target of 90%. The eleven provinces in question are West Sulawesi, Southeast Sulawesi, Maluku, East Nusa Tenggara, North Kalimantan, Riau, West Kalimantan, West Papua, West Sumatra, Papua and Aceh. Likewise, for Complete Baduta Immunization (IBL), there are still 17 provinces in Indonesia that are still below the national immunization target, with the 3 lowest achievements being West Sumatra, Papua and Aceh. For 2023, the national target is for 100% of babies aged 0-11 months to receive complete immunization, with a target achievement in the first trimester of 33.3%. However, in fact, the results as of April show that nationally in Indonesia only 175 thousand or 4.02% of babies have received complete immunization in Indonesia. Even though the government is targeting complete immunization coverage for 0-11 this month at 33.3% in April 2023.

However, no province has yet been able to achieve this target. There are five provinces whose achievement is still below 1%, namely Maluku, North Sumatra, Papua, DI Yogyakarta, and Aceh. Of course, this is very worrying and vulnerable to extraordinary events (KLB). Because low immunization coverage for children and babies results in the formation of Herd Immunity, of course there will be the potential for an outbreak or outbreak. Immunization coverage must be increased, considering that the majority of provinces in Indonesia have a high risk of transmission of polio, measles and diphtheria. A total of 21 provinces and 296 districts/cities are areas with a high risk of polio transmission. Likewise with measles, as many as 10 provinces and 194 districts/cities in Indonesia are included in areas with high and very high risk of measles transmission.

In fact, in 2022 to 2023 there will be an outbreak of type 2 polio in Indonesia. In 2022 in Aceh Province in Pidie, North Aceh and Bireuen Regencies, and in 2023 polio immunization coverage in Purwakarta, West Java is very low. In an effort to increase immunization coverage, the Ministry of Health is running a program to provide additional immunization against polio, diphtheria and measles. Additional polio immunization was carried out in the provinces of West Java, Aceh, North Sumatra, West Sumatra and Riau. Meanwhile, additional diphtheria immunization was carried out in Garut district, as well as additional measles immunization in Central Papua province. (5)

The Aceh Health Service stated that complete basic immunization coverage for children in the province in 2019 was only 49 percent or did not reach the target set at 93 percent. One of the causes of not achieving complete immunization of children in Aceh Province is influenced by the information that is developing in the community regarding the halal level of immunization vaccines. Achieving the complete immunization target in an area

is also greatly influenced by the situation, conditions and good understanding by the community of the importance of complete immunization given to children. One effort to increase complete immunization coverage is to increase public awareness and understanding of the importance of immunization and convey supporting regulations for each vaccine that will be given at each stage of immunization. Complete immunization is the immunization received by each child according to the stages starting from HB 0, BCG and Polio 1, polio 2, Polio 3, Polio 4, DPT-HB-Hib 1, DPT-HB-Hib 2, DPT-HB-Hib 3, IPV and measles rubella. Education according to level up to Posyandu regarding the importance of immunization in an effort to prevent children from various disease outbreaks, especially infectious diseases. For your information, currently the complete immunization coverage is not only up to 9 months of age, but there is also another for 18 months of age, namely the fourth DPT-HB-Hib immunization and measles-rubella then continued again at the first grade, second grade and fifth grade school age. Complete immunization coverage can only be said to be complete when the child has received all of these immunizations, not just complete basic immunization coverage from 0 to 9 months of age. (6)

## **2. RESEARCH METHODS**

The type of research used in this research is descriptive observational research using retrospective data. This research was conducted in Geulanggang Gampong Village, Kota Juang District, Bireuen Regency on December 11 2023. The population in this study were all babies born in January 2022 and January 2023 in Geulanggang Gampong Village, Kota Juang District, Bireuen Regency. The sample in this study was selected using a probability sampling method using a total sampling type that was in accordance with the inclusion criteria and exclusion criteria of this study. The data used in this research is secondary data, namely monthly reports on the results of routine infant immunizations. The data analysis used in this research is univariate analysis for the frequency of measurement results.

## **3. RESULTS AND DISCUSSIONS**

Based on research conducted at the Geulanggang Gampong Village Midwife, Kota Juang District, Bireuen Regency, it was found that 30 babies born in January 2022 and January 2023 met the inclusion and exclusion criteria. The characteristics of the subjects of this study are shown in Table 1 below.

**Table 1 Frequency Distribution of Research Subject Characteristics**

Characteristics	Frequency (n=30)	Percentage (%)
<b>Baby Birth</b>		
January 2022	22	73.3
January 2023	8	26.7
<b>Gender</b>		
Man	15	50
Woman	15	50

The distribution of basic infant immunization frequencies is as shown in Table 2

**Table 2 Frequency Distribution of Basic Infant Immunizations**

Category	Birth			
	January 2022		January 2023	
	n	%	n	%
<b>Type of Immunization</b>				
HB 0	22	73.3	20	66.6
BCG	20	66.6	7	23.3
POLIO-1	21	70	8	26.7
DPT-HB-1	18	60	4	13.3
POLIO-2	21	70	7	23.3
PVC-1	7	23.3	5	16.7
RV-1	2	6.7	1	3.3
DPT-HB-2	16	53.3	3	10
POLIO-3	15	50	6	20
PVC-2	3	10	1	3.3
RV-2	0	0	1	3.3
DPT-HB-3	11	36.7	2	6.7
POLIO-4	11	36.7	4	13.3
IPV-1	4	13.3	1	3.3
MEASLES-RUBELLA-1	10	33.3	3	10
IPV-2	1	3.3	0	0
<b>AVERAGE</b>		<b>43.3</b>		<b>10</b>

The frequency distribution of complete basic infant immunization can be seen in Table 3.

**Table 3. Frequency Distribution of Basic Infant Immunization Completeness**

Types of Immunization	Born January 2022		Born January 2023		Percentage Difference
	n	%	n	%	
	Complete Basic Immunization	17	<b>56.7</b>	<b>6</b>	
Incomplete Basic Immunization	4	13.3	4	13.3	0

### Characteristics of research subjects

This research has obtained 30 samples recorded in the monthly report on routine immunization results for babies in Geulanggang Gampong Village in Kota Juang District, Bireuen Regency. Based on Table 1, it shows that the number of babies born in January 2022 (73.3%) is more than babies born in January 2023 (26.7%). The gender characteristics of men (50%) are the same as the number of women (50%).

### **Characteristics of basic infant immunization**

Based on Table 2, it is found that the majority of basic immunization coverage for babies born in January 2022 is higher than for babies born in January 2023. The highest coverage of basic immunization types for babies in 2022 (73.3%) comes from Hepatitis B, BCG, and Polio 1. The highest coverage of basic infant immunizations in 2023 will be Hepatitis B immunization (73.3%). Hepatitis B immunization gets a high score for babies born in January 2022. Hepatitis B vaccine is a vaccine that has been prepared for the birth of babies in every health facility. Hepatitis B immunization can provide optimal effects if given at < 24 hours after birth. However, for areas with difficult access, Hepatitis B immunization can still be given until <7 days old. (16) (Minister of Health of the Republic).

The high coverage of Hepatitis B immunization shows that the majority of people have chosen to have births and neonatal visits at health facilities. This has excellent potential in preventing unpredictable emergency events and can reduce maternal and infant mortality rates. Coverage of basic immunization types for babies born in January 2022 for types DPT-HB-Hib 1, 2, 3, Polio 2, 3, 4, gets 36.7% -73.3%, and Measles-Rubella gets 33.3%. The frequency of immunization against PVC-1 (23.3%), RV-1 (6.7%), and IPV-1 (13.3%) is still low due to not visiting posyandu and giving immunizations past the immunization deadline. Coverage of basic immunization types for babies born in January 2023 other than Hepatitis B has shown a decline. Immunization with low coverage was obtained from PVC-1 (16.7%), RV-1 (3.3%), and IPV-1 (3.3%) immunizations. The low frequency of providing basic infant immunizations occurs due to not visiting posyandu and the time for immunizations has passed. Assessing the coverage of providing basic types of immunization for babies born in January 2022, most of them have reached the target (73.3%). The average value of basic immunization coverage for babies born in January 2023 (10%) is lower than babies born in January 2022 (43.3%) with a difference of 33.3%.

The COVID-19 pandemic was declared by WHO on March 11, 2020. The COVID-19 pandemic has had an impact on public health services, one of which is child health in the field of immunization. Several impacts have had on immunization services, such as high transmission of COVID-19, diversion of some funds for handling the pandemic, restrictions on travel outside the region, and school closures. This impact forced the temporary closure of immunization services at several posyandu and community health centers. An increase in the spread of COVID-19 in an area can affect the implementation of immunization at posyandu because it has to bring people to the same place. (9)

Based on the research results of Jufitriani Ismy, et al (2022) entitled Baby Basic Immunization Coverage Before and During the COVID-19 Pandemic in Kota Juang District, Bireuen Regency, it can be concluded that basic baby immunization coverage before the COVID-19 pandemic was 39.5% and during the COVID pandemic -19 is 18.3%. The decrease in basic infant immunization coverage was found to be 21.2%. Research by Bramer, et al (2020) in Michigan explains that if measles vaccination coverage is <90%–95%, then the ability to build herd immunity or group immunity is not achieved and this could lead to a measles outbreak. Measles Rubella (MR) immunization coverage from Indonesia's national immunization data for the period January to March 2020 shows a decrease compared to achievements in the same period in 2019 of 13%.

Research conducted by McDonald, et al (2020) in England showed that there was a decrease in immunization coverage in weeks 1-9 of 2020 for routine hexavalent immunization by 5% and MMR by 1% compared to 1 year previously. McDonald, et al again conducted research on routine immunization in children when the program to prevent transmission of COVID-19 was implemented and 3 weeks after the program was running. The research results show that routine immunization coverage for hexavalent and MMR types is lower than in 2019 for the same period.

### **Characteristics of completeness of basic infant immunization**

Based on Table 4.4, it shows that babies born in January 2022 (56.7%) received complete basic immunization coverage which was higher than babies born in January 2023 (13.3%). The difference in the percentage value of complete basic immunization is 36.7%. Basic immunization coverage is incomplete for babies born in January 2022 (50%) and has increased for babies born in January 2023 (50%) with a difference of 0%. The decrease in basic infant immunization coverage occurred as a result of patients changing residential addresses and immunizations being provided past the research assessment schedule.

## **4. CONCLUSIONS AND SUGGESTIONS**

Based on the results of the research and discussion explained above, it can be concluded that complete basic immunization coverage for babies in 2022 is 56.7% and in 2023 it is 20%. The difference in basic infant immunization coverage was found to be 36.7%.

## **BIBLIOGRAPHY**

Aceh Health Department. (2020). Complete basic immunization coverage does not reach target [Internet]. Available at: <https://www.antaranews.com/berita/1423377/dinkes-aceh-cakupan-immunisasi-dasar-complete-tak-capai-target> (accessed April 15, 2020).

- Bramer, C. A., Kimmins, L. M., Swanson, R., Kuo, J., Vranesich, P., Carroll, L. A. J., et al. (2020). Decline in child vaccination coverage during the COVID-19 pandemic—Michigan Care Improvement Registry, May 2016-May 2020. *MMWR Morbidity and Mortality Weekly Report*, 69(20), 669–673. <https://doi.org/10.15585/mmwr.mm6920a3>
- Darmin, R., Ningsih, S. R., Mongilong, R., Goma, M. A. D., & Anggaria, A. D. (2023). The importance of complete basic immunization for infants and toddlers. *Journal of Community Service MAPALUS Gunung Maria Tomohon College of Health Sciences*, 1(2). <https://doi.org/10.37531/jcs.v1n2.2023>
- Hurlock, E. B. (2014). *Child development* (6th ed., Vol. 1). Erlangga Publishers.
- Indonesian Ministry of Health. (2024). *World immunization week 2024 handbook*. <https://www.scribd.com/document/726044037/Buku-Panduan-Pekan-Imunisasi-Dunia-2024>
- Ismay, J., Taufik, N. H., Sovira, H., Andayani, H., & Mardhatillah, M. (2022). Coverage of basic infant immunization before and during the COVID-19 pandemic in Kota Juang District, Bireuen Regency. *Syah Kuala Medical Journal*, 22(1), 60–67. <https://doi.org/10.24815/skmj.v22i1.25463>
- McDonald, H. I., Elise, T., White, J. M., Woodruff, M., Knowles, C., Bates, C., Parry, J., et al. (2020). Early impact of the coronavirus disease (COVID-19) pandemic and physical distancing measures on routine childhood immunizations in England. *Vaccine*, 38(51), 8140–8147. <https://doi.org/10.1016/j.vaccine.2020.10.053>
- Ministry of Health of the Republic of Indonesia. (2023). *Guidebook for World Immunization Week 2023*.
- Ministry of Health of the Republic of Indonesia. (2023). *Hati-hati cakupan imunisasi dunia berpotensi KLB*. <https://www.kemkes.go.id/id/rilis-kesehatan/hati-hati-cakupan-immunisasi-dunia-berpotensi-klb> (accessed May 24, 2023).
- Ranuh, I., Hadi, N., & Rini, N. (2011). *Book on immunization in Indonesia*. Jakarta: IDAI Immunization Task Force.
- Republic of Indonesia Ministry of Health. (2013). *Minister of Health Regulation No. 42 of 2013 concerning immunization*. Jakarta: Indonesian Ministry of Health.
- Republic of Indonesia Ministry of Health. (2018). The government is optimistic that the diphtheria outbreak can be resolved. Communications and Community Services Bureau. Indonesian Ministry of Health. <https://www.depkes.go.id/article/view/18011500004/gov-optimis-klb-diphteri-bisa-teratasi.html> (accessed February 19, 2019).
- Republic of Indonesia Ministry of Health. (2020). *Regulation of the Minister of Health of the Republic of Indonesia Number 12 of 2017 concerning implementation of immunization*. [http://hukor.kemkes.go.id/uploads/produk\\_law/PMK\\_No\\_12\\_ttg\\_Penelenggaraan\\_Imunisasi\\_.pdf](http://hukor.kemkes.go.id/uploads/produk_law/PMK_No_12_ttg_Penelenggaraan_Imunisasi_.pdf)