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Profile Of Childhood Measles Patients At Rsi Siti Rahmah Padang 2020-2022

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Abstract

Measles (morbilli), caused by the Morbillivirus, is a highly contagious disease primarily affecting children under 15 years of age. The incidence of measles in Indonesia, particularly in West Sumatra, has been increasing due to declining vaccination coverage. This study provides a descriptive analysis of pediatric measles cases at RSI Siti Rahmah Hospital in Padang, using secondary data from medical records between March 2020 and August 2022. A total of 57 pediatric measles patients were identified. The majority of these patients were aged 5-9 years and predominantly female. Diagnoses were primarily made through anamnesis and physical examination. Most patients had a history of measles vaccination, and more than 50% had good nutritional status. Importantly, 71% of patients with complications had not received measles vaccination. These findings suggest that measles vaccination is likely effective in reducing the severity and complications of the disease in children, highlighting the critical need for maintaining high vaccination coverage to mitigate the impact of measles outbreaks.
Keywords: *epidemiology, children, measles, Morbillivirus, vaccination.*

1. Introduction

Measles, caused by the Morbillivirus, primarily affects children under 15 years of age. This highly contagious disease spreads through droplets from saliva and respiratory secretions released during sneezing, coughing, or talking. Approximately 90% of individuals exposed to an infected person will contract the disease (Minta et al., 2023). Symptoms of measles range from high fever, reaching up to 30-40 degrees Celsius, hyperemic conjunctiva, cough, runny nose, and joint pain. Small spots may also appear inside the mouth a few days after infection, which then spread to the face, upper neck, and subsequently to the lower body (Maryati Sutarno & Noka Ayu Putri Liana, 2019).

Measles stands as an endemic disease across various nations and stands as a significant contributor to mortality rates among infants and children. Severe manifestations of measles are often observed in children grappling with malnutrition, particularly those experiencing deficiencies in vitamin A, or facing immunocompromised states(Jamison et al., 2006). The deployment of measles immunization stands as a pivotal preventive strategy aimed at curtailing the incidence of this ailment. Before the widespread implementation of immunization protocols, nearly 20 million individuals contracted measles in 1980, leading to approximately 2.6 million fatalities globally (*Kementrian Kesehatan RI*, 2018). This figure has shown a consistent decrease in tandem with the broadening coverage of immunization initiatives. In Indonesia, measles vaccination is typically administered at the age of 9 months, while in developed nations, the regimen is usually initiated after the child reaches 12 months of age (Huvaid et al., 2019). Although vaccination does not confer absolute immunity to measles, it substantially reduces the risk of contracting the disease, while also mitigating the severity of any symptoms that may manifest. Furthermore, there is no recent research available on the effects of measles vaccination on measles complications.

In Indonesia, from 2014 to 2018, there were 89,127 suspected measles cases and 22 related deaths. Of these, 19,392 cases were laboratory-confirmed, with 89% occurring in children under the age of 15 (“Kementrian Kesehatan RI,” 2020). In 2020, the number of reported measles cases decreased significantly to 3,382 compared to previous years. This reduction is likely attributable to the COVID-19 pandemic, which redirected the focus of surveillance personnel across all levels toward managing the pandemic(Ariani et al., 2024). Consequently, other health programs, including those targeting vaccine-preventable

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diseases (VPDs), were not executed as per the established standards(Ngwa et al., 2022). This disruption is further corroborated by a study that concluded that the COVID-19 pandemic adversely affected essential health services, including immunization programs, resulting in decreased VPD immunization coverage and potentially increasing the risk of other health issues(Shet et al., 2022). Given this context, we present the first study conducted at Siti Rahmah Islamic Hospital in Padang, focusing on the profile of pediatric measles patients from 2020 to 2022.

2. Method

This study is a descriptive research utilizing a cross-sectional design research. It was conducted at Siti Rahmah Islamic Hospital in Padang from November 2022 to March 2023. The total sampling technique was employed, resulting in 57 samples. These samples consisted of pediatric patients diagnosed with measles at Siti Rahmah Islamic Hospital who met the inclusion criteria, specifically those diagnosed with measles based on clinical and laboratory diagnoses from March 2020 to August 2022. Data were extracted from medical records, and data processing was conducted using SPSS version 25.0. Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Baiturrahmah, under approval number 207/ETIK-FKUNBRAH/03/12/2022.

3. Results and Discussion

Table 1. Profile of Pediatric Measles Patients at Siti Rahmah Islamic Hospital, Padang, March 2020-August 2022

Characteristics	f	%
Age (year)		
0 - <1	12	21.05
1- 4	19	33.34
5-9	23	40.35
10-15	3	5.26
16	0	0
Total	**57**	**100.00**
Gender		
Male	26	45.61
Female	31	54.39
Total	**57**	**100.00**
Measles Diagnosis		
Medical History and Physical Examination	40	70.18
Medical History, Physical Examination, and Immunoglobulin M (IgM)	17	29.82
Total	**57**	**100.0**
Measles Immunization History		
No Immunization	14	24.56
Immunization at 9 Months	14	24.56
Immunization at 9 Months + Booster at 18 Months	26	45.62
Measles Immunization Outside Government Schedule	3	5.26
Total	**57**	**100.00**
Nutritional Status		
Severely Malnourished	2	3.51
Underweight	7	12.28
Normal Nutrition	43	75.44
Overweight	5	8.77

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Total	**57**	**100.00**
Complications		
No Complications	50	87.72
Pneumonia	1	1.75
Diarrhea	6	10.53
Encephalitis	0	0.00
Subacute Sclerosing Panencephalitis (SSPE)	0	0.00
Otitis Media	0	0.00
Keratitis	0	0.00
Septicemia	0	0.00
Total	**57**	**100.00**

Source: Data Processing

We observed that the predominant age group diagnosed with measles at RSI Siti Rahmah between 2020 and 2022 was 5-9 years old (40.4%). These findings resonate with those documented by (*Kementrian Kesehatan RI*, 2018), where the majority of suspected measles cases in Indonesia fell within the 5-9 age bracket (29%). Given the susceptibility of children to infections, including measles, this age cohort remains particularly vulnerable. Another study by (Liwu et al., 2016) similarly noted that the most prevalent age range affected was 1-59 months (54.1%). Supporting these assertions, a recent study by(Sari & Daramuseng, 2020) reported the highest incidence among patients aged 2 years old (27.1%).

In this study, females were the most prevalent gender, comprising 31 children (54.4%). This finding aligns with the research conducted by (Nurlaila & Hanna, 2017), which reported that measles was more prevalent among females (60%), with an odds ratio (OR) of 1.50. Conversely, (Liwu et al., 2016) found that measles patients were predominantly male, accounting for 57.6%. Similarly, research by (Isu et al., 2016), also observed a higher incidence among males; however, statistically, gender did not have a significant association with measles incidence. Therefore, gender was not identified as a risk factor for measles occurrence.

A total of 70.2% of cases were diagnosed based on medical history and physical examination, with only 29.82% diagnosed through Immunoglobulin M (IgM) testing (Farahdina & Wulan, 2017). Measles diagnosis itself can be established based on clinical manifestations and epidemiology. Typical clinical symptoms greatly aid in confirming this diagnosis, such as the presence of conjunctivitis during the catarrhal stage, the identification of Koplik's spots on the 2nd to 3rd day of fever, and the emergence of a characteristic rash (maculopapular rash) starting from behind the ears, spreading across the forehead, face, and then to the entire body. Auxiliary examinations are rarely conducted if these typical clinical symptoms are already present. Serological testing for Immunoglobulin M (IgM) is one of the auxiliary examinations that can be performed. Confirmation of measles infection serologically depends on a four-fold increase in antibody titers between the acute and convalescent phases, or the presence of specific measles IgM antibodies in a single serum specimen collected between 1-2 weeks after the onset of rash (Jensen et al., 2014).

Nearly the majority of measles patients (45.6%) had a history of measles immunization at 9 months of age, followed by a booster at 18 months. This finding is consistent with research conducted by Sari et al., who found that approximately 83.3% of children with measles had a history of measles immunization(Sari & Daramuseng, 2020). This study also found that 14 children (24.56%) had never been immunized, and another 14 children (24.56%) had only received immunization at 9 months of age without a booster at 18 months. This is in line with the still low measles immunization coverage in Indonesia. Based on data from the Central Statistics Agency (BPS, 2024), in 2023 the measles immunization coverage in Indonesia is approximately 70.14%, with West Sumatra having the lowest coverage in Indonesia at only about 56.48%. This immunization coverage data does not

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meet the target for basic immunization coverage in West Sumatra in 2021. The West Sumatra Health Office targeted basic immunization coverage in West Sumatra to be 70% in 2021 (BPS, 2020)

The majority of patients in this study had good nutritional status (75%) and experienced measles without complications (87.72%). According to (Marcdante et al., 2014), children with poor nutritional status are more susceptible to infections, including measles. Malnutrition can impair the immune response, hindering the elimination of the virus(Datu et al., 2024). The relationship between nutritional status and measles is bidirectional and mutually exacerbating. Children with poor nutritional status can have more severe measles infections, and those who contract measles can also suffer from worsened nutritional status. Children with measles who are malnourished are more likely to experience complications compared to those with good nutrition. Therefore, in this study, the majority of measles patients did not experience complications (Serres et al., 2012).

Out of 7 children who experienced complications from measles, 5 had not received measles immunization, resulting in complications such as pneumonia and diarrhea. This indicates that children who are incompletely vaccinated or unvaccinated are more likely to experience severe symptoms or complications compared to those who are fully vaccinated. This observation underscores the potential role of immunization in mitigating the severity and complications of measles in children, particularly in preventing pneumonia and other serious outcomes(Perrone & Meissner, 2020). Measles without complications generally resolves on its own within approximately ten days. Good prognosis tends to occur in children with generally good health, but it worsens in children with chronic illnesses or complications (Onyiriuka, 2011). Complications typically occur in high-risk children, such as those under one year of age, malnourished children (marasmus or kwashiorkor), those living in crowded and unsanitary conditions, children with compromised immunity (HIV, malnutrition, or malignancy), and those with vitamin deficiencies.

4. Conclusions and Suggestions

Based on the findings of this study, it is evident that pediatric measles cases diagnosed at RSI Siti Rahmah between March 2020 and August 2022 predominantly occurred in the 5-9-year age bracket, with a higher prevalence among females. Diagnosis primarily relied on medical history and physical examination, with most patients having received measles immunization at 9 months and 18 months of age and falling into the category of good nutrition. The observed measles cases in this study generally presented mild symptoms, as complications were notably absent in the majority of patients.

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