

Narrative Literature Review: Management of Varicella in Children

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Chickenpox (varicella) is a common infectious disease in children caused by the Varicella Zoster Virus (VZV). The disease is generally mild and resolves within 5–7 days, with a characteristic rash that rapidly develops into vesicles. However, varicella carries a risk of complications, particularly in infants, immunocompromised children, and young adults. Management of varicella includes symptomatic therapy, antiviral therapy in selected cases, and preventative measures through vaccination and family education. This review aims to summarize strategies for managing varicella in children based on various scientific literature. This study used a narrative literature review method with a reference search strategy from various sources, such as Google Scholar, PubMed, theses, textbooks, and national and international journals relevant to the research topic. The literature used was published between 2020 and 2025. Inclusion criteria included articles discussing the management of varicella in children, while exclusion criteria included articles that were not fully accessible, irrelevant to the research topic, or published outside the specified year range. The data obtained were analyzed descriptively to provide a comprehensive overview of the management approach for varicella in children. The literature review indicates that varicella in children is generally mild, with the main symptoms being a vesicular rash and fever. However, this disease still carries a risk of complications, especially in neonates and children with impaired immune systems. Management in immunocompetent children focuses more on supportive therapy, while antiviral therapy is recommended for high-risk groups. Furthermore, family education, prevention of transmission, and vaccination play a crucial role in reducing the number of complications and the spread of the disease. A holistic and interdisciplinary approach, involving patients, families, and healthcare professionals, has proven effective in accelerating the recovery process, reducing complications, and reducing the overall burden of disease. In conclusion, the management of varicella in children requires a comprehensive strategy through the integration of medical therapy, preventive measures, and family education to improve clinical outcomes and children's quality of life sustainably.

Keywords: Varicella, Children, Management, Prevention of Complications.

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1. Introduction

Chickenpox, or varicella, is a common infectious disease in children caused by the Varicella Zoster Virus (VZV). This disease is generally mild and can heal on its own within five to seven days. Transmission of varicella occurs through direct contact with the skin lesions of the sufferer or through airborne droplets from the respiratory tract of an infected sufferer. After the primary infection resolves, the virus does not completely disappear from the body, but remains latent in the dorsal posterior ganglion and can reactivate several years later in the form of Herpes Zoster or shingles. This disease has a high rate of transmission, especially in school-age children who have not received the varicella immunization [1].

Varicella Zoster Virus is a member of the Herpesviridae family type 3 that contains genetic material in the form of DNA. This virus has the ability to attack epithelial cells of the skin and the nervous system, causing clinical manifestations in the form of a typical vesicular rash in people with varicella. In addition to causing

primary varicella, this virus can also trigger herpes zoster due to reactivation of the latent virus, especially in individuals with a weakened immune system. The incubation period for varicella generally lasts 10–21 days after exposure to the virus. During this period, the virus replicates in the respiratory tract before spreading through the bloodstream to the skin and other body tissues [2].

Varicella remains a common infectious disease in many countries, including Indonesia. In subtropical countries, the incidence of varicella increases more frequently during winter and spring. This disease can affect all age groups, from neonates to adults, but most cases are found in children aged 5–10 years. Serological prevalence also increases with age, so that almost all adults have experienced varicella infection. In some developing countries, limited vaccination coverage means that the incidence of varicella remains relatively high and has the potential to cause outbreaks in schools and communities [3].

The clinical manifestations of varicella generally begin with mild prodromal symptoms such as fever, malaise, decreased appetite, headache, and weakness. In children, a rash is often the first sign of the disease. The rash progresses rapidly from macules to papules, then to vesicles filled with clear fluid before finally drying and forming crusts. Lesions usually appear first on the face, scalp, or trunk before spreading to the extremities and are accompanied by itching (pruritus). One of the distinctive characteristics of varicella is the presence of lesions in various stages of development simultaneously, giving it a characteristic appearance resembling "dewdrops on rose petals" [4].

In most healthy children, varicella is mild and resolves without serious complications. However, complications can occur, especially in infants under one year of age, adolescents, adults, pregnant women, and individuals with compromised immune systems. Complications include secondary bacterial skin infections, pneumonia, encephalitis, meningitis, dehydration, and sepsis. Varicella pneumonia is one of the most serious complications and is more common in immunocompromised patients. The risk of complications also increases in patients with poor nutritional status or certain chronic diseases, requiring more intensive medical monitoring [5].

Management of varicella in children aims to reduce symptoms, accelerate healing, prevent complications, and reduce the risk of transmission. In immunocompetent children with mild symptoms, supportive therapy is the primary approach, such as administering antipyretics to reduce fever, antihistamines to reduce itching, maintaining skin hygiene, and increasing fluid and nutritional intake. The use of antivirals such as acyclovir is recommended for high-risk groups and should be administered within the first 24 hours after the rash appears for optimal therapeutic effectiveness. Furthermore, temporary isolation of the patient is also important to prevent transmission to other susceptible individuals [6].

Varicella can be prevented through vaccination, which has been proven effective in reducing the incidence, complications, and mortality associated with this disease. The varicella vaccine is recommended for children according to the applicable immunization schedule. In addition to vaccination, family education about transmission methods, the importance of maintaining personal hygiene, and caring for children during illness also plays a crucial role in controlling varicella. Good support from family and healthcare professionals can help speed up a child's recovery and improve the patient's quality of life during treatment [7].

Based on this description, it is clear that varicella remains a health problem that requires special attention, especially in children. Although generally mild, this disease has the potential to cause serious complications if not properly managed. Therefore, this literature review was conducted to comprehensively summarize varicella management strategies in children to support more effective, optimal clinical practice, and a focus on preventing complications.

2. Literature Review and Problem Statement

Basic Concept of Varicella

Varicella, or chickenpox, is an acute infectious disease caused by the Varicella Zoster Virus (VZV), a DNA virus belonging to the Herpesviridae family. This disease is highly contagious and generally affects school-age children, although it can occur in all age groups. Transmission of varicella occurs through respiratory droplets, direct contact with the fluid from an infected person's vesicles, or through the air in enclosed spaces. After a person is infected, the virus will undergo an incubation period of approximately 10–21 days before clinical symptoms appear. Varicella is characterized by the appearance of a vesicular rash that spreads throughout the body, accompanied by fever, malaise, and itching. After the acute phase ends, the virus does not completely disappear from the body, but remains latent in the nerve ganglia and can reactivate later as Herpes Zoster. This disease is generally mild in healthy children, but can cause serious complications in infants, adults, pregnant women, and individuals with impaired immune systems [9].

Etiology of Varicella

The primary cause of varicella is the Varicella Zoster Virus, which measures approximately 100–110 nm and contains double-stranded DNA. This virus has the ability to replicate in epithelial cells and nerve tissue, causing characteristic vesicle-like lesions on the skin. Transmission of the virus occurs very rapidly, especially in crowded environments such as schools and daycares. An infected person can transmit the disease from 1–2 days before the rash appears until all lesions dry and form crusts. Risk factors that increase the incidence of varicella include not having received vaccination, close contact with sufferers, low immunity, poor nutritional status, and environments with poor sanitation. Children are the most vulnerable group to infection due to their underdeveloped immune systems and high levels of social interaction in both school and home environments [10].

Clinical Manifestations of Varicella

The clinical manifestations of varicella usually begin with prodromal symptoms such as low-grade fever, headache, weakness, malaise, and decreased appetite. In children, prodromal symptoms are often mild and even unnoticed, while in adults, symptoms can be more severe. A skin rash is the primary sign of varicella and progresses rapidly from macules to papules, then to vesicles filled with clear fluid before finally drying and forming crusts. Skin lesions usually appear first on the face, scalp, and trunk before spreading to the extremities. One characteristic of varicella is the presence of lesions in various stages of development simultaneously. The itching that accompanies the rash often causes children to scratch their skin, increasing the risk of secondary bacterial infections. In some cases, sufferers may also experience high fever, enlarged lymph nodes, and sleep disturbances due to the discomfort caused by the skin lesions [11].

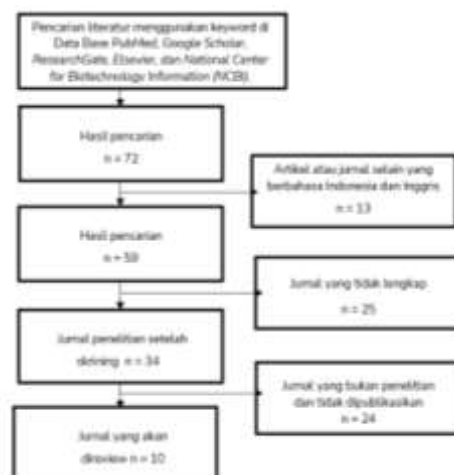
Varicella Prevention

Varicella can be prevented through immunization, the implementation of clean and healthy living behaviors, and public education regarding the transmission of the disease. The varicella vaccine has been proven effective in reducing the incidence, severity of the disease, complications, and hospitalization rates due to varicella. Immunization is recommended for children according to the applicable vaccination schedule to build immunity against Varicella Zoster Virus infection. In addition to vaccination, isolating patients during the active infection period is also important to prevent transmission to other susceptible individuals. Educating families about the importance of maintaining personal hygiene, washing hands, trimming children's nails, and maintaining nutritional intake during the illness can help speed the recovery process and prevent complications. Continuous promotive and preventive efforts are essential to reduce the burden of varicella disease in children [14].

3. Method

This study used a literature review method with a narrative review type. The literature review method is a form of research conducted through searching, collecting, and reviewing various literature relevant to the research topic. This type of research was chosen because it aims to comprehensively examine the management of varicella in children, which includes pharmacological therapy, supportive therapy, and efforts to prevent complications. Through this method, researchers can integrate various previous research results to obtain a broader and more in-depth picture of varicella management in children. The literature search strategy was carried out by collecting various relevant scientific references, both from national and international scientific journals, previous theses, textbooks, ebooks, and trusted online sources. The literature search was conducted through several academic databases and online scientific sources, such as PubMed, Google Scholar, ResearchGate, Elsevier, and the National Center for Biotechnology Information (NCBI). The literature search used keywords such as varicella management, varicella in children, pharmacological therapy, supportive therapy, and prevention of varicella complications. The use of these various sources aims to obtain valid, relevant data and information that aligns with the research focus. The type of data used in this study is secondary data, obtained from various online and offline literature.

Figure 1. PRISMA Flowchart of Research Article on Varicella Management in Children



The literature screening process in this study aims to examine the management of varicella in children based on various relevant scientific literature sources. This study used a literature review method with a narrative review type through searching and reviewing various literature related to pharmacological therapy, supportive therapy, and prevention of varicella complications in children. The literature search was conducted through several academic databases and online scientific sources, such as PubMed, Google Scholar, ResearchGate, Elsevier, and the National Center for Biotechnology Information (NCBI), using the keywords varicella management, varicella in children, antiviral therapy, supportive therapy, and prevention of varicella complications. The initial search results produced a number of relevant articles, then a selection process was carried out based on language, full-text availability, research quality, and suitability to the research focus. Articles that were not in Indonesian or English, were not available in full, were not original research results, or did not have a strong connection to the research topic were eliminated from the review process. After all screening stages were carried out, a number of articles were obtained that met the inclusion criteria and were deemed worthy of further analysis to provide a comprehensive picture of various approaches to managing varicella in children, including pharmacological therapy, supportive therapy, and efforts to prevent complications as a basis for preparing evidence-based recommendations in the management of varicella in children.

4. Results and Discussion

No	Article	Design / Population	Main Parameters	Place / Time	Results	Conclusion
1	<i>Management of a 9-Year-Old Boy with Varicella through a Family Medicine Approach</i> (Riandini & Effendi, 2024)	<i>Case report</i> , 9 year old child	Clinical symptoms, pharmacological and non-pharmacological management, family education	Indonesia, 2024	The patient presented with a vesicular rash accompanied by itching and was diagnosed with varicella. Management was conducted holistically, using a patient-centered, family-centered, and community-oriented approach. Evaluation showed improved patient and family knowledge.	Holistic management of varicella through a family medicine approach can increase the success of therapy and prevent disease transmission.
2	<i>The Clinical and Economic Burden of Antibiotic Use in Pediatric Patients With Varicella Infection: A Retrospective Cohort Analysis of Real-World Data in England</i> (Kujawski et al., 2024)	<i>Retrospective cohort</i> , 114,578 children <18 years with varicella	Varicella complications, antibiotic use, healthcare costs	England, 2014–2018	7.7% of patients experienced complications, and 25.9% received antibiotics. Antibiotic use was higher in patients with complications. Varicella causes a significant healthcare cost burden.	Varicella is associated with high antibiotic use and healthcare costs, especially in complicated cases. National vaccination programs can reduce the burden of the disease.
3	<i>Managing Neonatal Varicella: A Case Series Highlighting the Effectiveness of Antiviral Therapy Without IVIG</i> (Suryaningrat et al., 2025)	<i>Case series</i> , 2 neonates with varicella	Clinical symptoms, antiviral therapy, complications	Indonesia, 2025	Two neonates developed a vesicular rash and fever, complicated by pneumonia and respiratory failure. Antiviral therapy and supportive care were	Early antiviral therapy, close monitoring, and supportive care are effective in the management of neonatal

					administered without IVIG, and both patients recovered successfully.	varicella even without IVIG.
4	<i>Recognition and Management of Varicella Infections and Accuracy of Antimicrobial Recommendations</i> (Fergie et al., 2022)	<i>Survey study</i> , 153 health workers	Varicella diagnosis, antibiotic and antiviral therapy recommendations	United States, 2022	Varicella was correctly recognized in 79% of cases, but inappropriate use of antibiotics and antivirals was still found.	Education and training of health workers is needed to improve the accuracy of varicella diagnosis and therapy and to avoid unnecessary use of drugs.
5	<i>Interdisciplinary Management of Varicella-Zoster Virus Infection: Integrating Medical Treatment, Nursing Care, and Health Information Systems</i> (Alyami et al., 2025)	<i>Literature review</i>	Diagnosis, antiviral therapy, supportive care, vaccination, health information systems	Global, 2025	Immunocompetent children may only receive supportive therapy, while high-risk groups require early antiviral therapy such as acyclovir. Vaccination has been shown to reduce the incidence and severity of the disease.	An interdisciplinary approach that integrates medical therapy, nursing, and health information systems is essential to prevent complications and improve patient outcomes.
6	<i>Clinical Features and Therapeutic Approach of Varicella Zoster in a Pediatric Patient at Way Laga Health Center, Bandar Lampung, Indonesia</i> (Alfarisi et al., 2025)	<i>Case report</i> , boy aged 6 years 11 months	Clinical manifestations, pharmacological and non-pharmacological therapy, family education	Bandar Lampung, Indonesia, 2025	The patient experienced widespread vesicular lesions accompanied by pruritus and a low-grade fever. Therapy included acyclovir, cetirizine, paracetamol, salicylic acid powder, along with hygiene education and temporary isolation. Symptoms improved within a week.	Early diagnosis, appropriate antiviral therapy, and family education can reduce symptoms, prevent complications, and limit the transmission of varicella to children.

7	<i>Pediatric Herpes Zoster: Should I Be Concerned for Immunodeficiency? A Review</i> (Zhang, Kim & Grunebaum, 2025)	<i>Literature review</i> , pediatric patients with herpes zoster	The relationship between herpes zoster and immunodeficiency	Global, 2025	Herpes zoster in children is rare, but may be associated with T-cell immune deficiency due to certain infections or diseases.	Isolated herpes zoster in children does not always indicate immunodeficiency, but certain clinical signs require further evaluation.
8	<i>Assessment of Cellular and Humoral Immunity Against Varicella-Zoster Virus in Adult Allogeneic Hematopoietic Cell Transplant Recipients</i> (Konuma et al., 2025)	<i>Cross-sectional study</i> , 44 adult post-transplant patients	Cellular immunity, VZV IgG antibodies, vaccination effect	Japan, 2023–2024	Patients with a history of zoster reactivation and vaccination showed a higher immune response than other patients.	VZV reactivation and vaccination enhance humoral and cellular immunity in post-transplant patients.
9	<i>Update on Infection with Varicella-Zoster Virus in Children: A Narrative Review</i> (Wollina et al., 2025)	<i>Narrative review</i> , infants, children, and adolescents	Clinical manifestations, complications, therapy, prevention	Global, 2025	VZV is highly airborne, and complications can occur in certain risk groups. Therapy includes acyclovir and immunoglobulin, while primary prevention is vaccination.	VZV infection in children is generally mild, but can become severe in certain conditions, so vaccination and antiviral therapy are important.
10	<i>Varicella-Zoster Virus Infection in Children with Malignancies or Undergoing HSCT in Poland</i> (Choma et al., 2026)	<i>Multicenter cohort</i> , 13,441 children with malignancy/HSCT	VZV incidence, antiviral therapy, outcome	Poland, 2012–2023	There were 167 cases of VZV, most of which were mild and treated using intravenous acyclovir for ± 10 days.	Acyclovir therapy is effective in immunocompromised patients, while prophylaxis and early therapy are important to prevent complications.

Management of varicella in children is an important aspect of clinical practice because, although the disease is generally mild, it still has the potential to cause serious complications, especially in certain risk groups. Based on the results of various studies, varicella management does not only focus on medical therapy, but also includes a holistic approach through family education, prevention of transmission, and early identification of the risk of complications. Most studies indicate that varicella in children is characterized by the appearance of a typical vesicular rash accompanied by pruritus and mild to moderate fever. The main clinical manifestation is a widespread vesicular lesion with a history of close contact with varicella sufferers [11]. Pediatric patients also often experience a vesicular rash accompanied by itching and low-grade fever as the main symptoms of varicella infection [12]. Varicella Zoster Virus infection is highly contagious through airborne transmission and has a characteristic clinical picture, so the diagnosis can generally be made clinically [13]. In atypical cases or patients at high risk of complications, additional tests such as PCR and serology can be considered to help establish a more accurate diagnosis [14].

Management of varicella in children depends on the severity of the disease and the patient's immunological condition. In immunocompetent children, supportive therapy such as administering antipyretics, antihistamines, maintaining skin hygiene, and providing adequate fluids and nutrition is the primary approach. The combination of supportive therapy and antivirals such as acyclovir is known to accelerate symptom improvement within about one week [12]. In addition to acyclovir, valacyclovir is also known as an alternative antiviral with higher oral bioavailability and less frequent dosing, which can improve patient compliance [21]. Early antiviral therapy is essential for high-risk groups such as neonates and immunocompromised patients [14]. Early antiviral administration accompanied by supportive care and close monitoring can provide good outcomes in neonates with varicella even without the use of intravenous immunoglobulin (IVIG) [15]. However, the use of antibiotics and antivirals that is not in accordance with guidelines is still found, so increased education and training for health workers is needed [16].

Although most cases of varicella are mild, several studies have shown a significant risk of complications. Approximately 7.7% of pediatric patients experience complications, contributing to increased antibiotic use and healthcare costs [17]. Common complications include secondary bacterial infections, pneumonia, and other systemic disorders. Serious complications such as pneumonia and respiratory failure can also occur in neonates with varicella [15]. Children with malignancies are at higher risk of complications, particularly hematologic malignancies [18]. Furthermore, herpes zoster in children is rare, but may be associated with immune system disorders, requiring further evaluation in certain cases [19].

Immune factors play a crucial role in the course of varicella. Vaccination and reactivation of infection can enhance the humoral and cellular immune responses to Varicella Zoster Virus [20]. Vaccination is also a key strategy in reducing the incidence and complications of varicella in children [13]. In addition, vaccination and post-exposure prophylaxis are effective in reducing the severity of the disease [14]. Vaccination programs also have significant potential in reducing the economic burden of varicella [17].

Management of varicella in children cannot be separated from the role of the family and a holistic approach to health care. A family medicine approach that focuses on the patient, family, and community can improve family knowledge and improve therapy success [11]. Integration between medical therapy, nursing care, and health information systems is also important in improving the quality of patient care [14]. Education regarding hygiene, temporary isolation, and prevention of transmission has proven effective in suppressing the spread of the disease [12]. Overall, the results of the review indicate that management of varicella in children requires a comprehensive approach ranging from accurate diagnosis, appropriate therapy, prevention of complications, to family education and vaccination to improve clinical outcomes and reduce transmission rates and the burden of disease broadly.

5. Conclusion

Based on the results of the review and synthesis of various studies, it can be concluded that varicella in children is generally a mild disease characterized by a vesicular rash and fever, but still carries a risk of complications, especially in neonates and children with immunocompromised systems. The diagnosis of varicella can mostly be made clinically based on the typical presentation of the disease, while additional tests such as PCR or serology are required in atypical cases or high-risk patients. Management of varicella is tailored to the severity of the disease and the patient's condition. In immunocompetent children, supportive therapy such as administration of antipyretics, antihistamines, maintaining skin hygiene, and adequate fluid and nutritional intake is generally sufficient. While in high-risk groups, antiviral therapy such as acyclovir is required to prevent more severe complications. Early and appropriate therapy, accompanied by good monitoring, has proven effective in accelerating the healing process and improving patient clinical outcomes.

In addition to therapy, preventive measures also play a crucial role in controlling varicella in children. Vaccination has been shown to reduce the incidence, severity, and complications of the disease. Family education regarding hygiene, temporary isolation, and prevention of transmission are also essential components of varicella management. Therefore, varicella management in children requires a holistic and interdisciplinary approach, involving the patient, family, and healthcare professionals. This comprehensive approach is expected to improve the quality of healthcare services, accelerate patient recovery, and reduce the risk of complications and disease transmission in the community.

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