

## **CHALLENGES IN EARLY DIAGNOSIS OF CHILDHOOD DISEASES: THE ROLE OF ROUTINE EXAMINATIONS AND EARLY DETECTION**

<sup>1</sup>Zenitha Meida Sari, <sup>2</sup>Stefanie, <sup>3</sup>Inayaturrehmaniyah bin Tahir, <sup>4</sup>Yunita Puspitasari, <sup>5</sup>Elizabeth Ruttina Hutagaol, <sup>6</sup>Yenny Purnama

---

<sup>1,4,5</sup>Doctor General Hospital Aligned  
<sup>1</sup>General Practitioner at Bunda Aliyah Hospital  
<sup>2,3</sup>Internship Assistant Bond Doctor Indonesian Children  
<sup>6</sup>Specialist Doctors Children's Hospital Aligned

Zenithameida88@gmail.com

### **ABSTRACT**

This study aims to explore the challenges of early diagnosis of childhood illnesses and examine the role of routine screening and early detection in addressing this issue. Childhood illnesses often require prompt and appropriate diagnosis to avoid potentially fatal complications. However, the process of early diagnosis in children is often faced with challenges, including in difficulties in identifying symptoms, lack of awareness of the importance of routine screening, and limitations in screening methods. This study used a qualitative approach by conducting a review of relevant literature. The findings highlighted the importance of educating parents about routine check-ups and symptoms to look out for, as well as the role of technology in improving accessibility of health services and supporting early detection of childhood illnesses. The implication of this study is the need for concerted efforts between healthcare providers, parents, and other relevant parties to raise awareness of the importance of early diagnosis in maintaining child health and minimizing the risk of complications that may occur.

**Keywords :** Early Diagnosis, Routine Examination, Childhood Illness

---

### **1. INTRODUCTION**

Health is an important thing and is starting to be paid attention to by society nowadays. An increase in lifestyle as well as unhealthy intake and eating patterns make a person's body vulnerable to various diseases, both old and new<sup>16</sup>. Children who are still in the developmental stage of their growth and development sometimes experience illness caused by viruses or bacteria.

Disease conditions in children sometimes show symptoms and some do not show any symptoms, so parents do not worry about their child's health condition. A disease that often attacks children showing symptoms such as fever, cough, runny nose, stomach ache, and so on. Meanwhile, diseases that do not show symptoms until they reach a fairly severe stage include anemia (iron deficiency), tuberculosis (TB), liver failure, congenital

heart defects, urinary tract infections<sup>13</sup> and so on.

An example of a disease that can attack children is thalassemia, which is a genetic condition that disrupts erythrocytes, red blood cells, and is caused by a genetic disorder that disrupts the synthesis of one or more globin chains in the hemoglobin molecule. This condition is inherited and can result in sufferers requiring blood transfusions throughout their life. Due to the hereditary nature of this disease, marriage between two individuals carrying the trait/thalassemia minor has the potential to produce 25% healthy offspring, 50% carriers of the trait, and 25% sufferers of thalassemia major. The growth of thalassemia cases throughout the world has raised concerns, prompting the establishment of prevention programs, not just focusing on treatment

and management of sufferers. The World Health Organization (WHO) has carried out various prevention efforts including routine mass screening, genetic counseling, and prenatal diagnosis. Early detection of beta thalassemia minor can be done through initial screening using simple indicators in individuals who are suspected to be at risk or who have family members who suffer from it. Knowledge about thalassemia can be given to teenagers at school or prospective brides to carry out early detection before marriage and prevent the birth of babies with thalassemia. Public awareness of self-examination before marriage can increase the success of early detection of thalassemia and avoid the risk of having a baby with all the consequences<sup>9</sup>.

To be able to find out what disease a child is experiencing, early detection is needed. This can be done by carrying out routine checks either through posyandu, community health center, doctor, or other health facilities. With routine control of children's health, detected diseases can be treated immediately.

As stated by h<sup>11</sup> inflammatory bowel disease in children is not common in Spain. It may go undetected initially, but early diagnosis can reduce the symptoms and complications associated with this disease and improve the prospects for a cure. It is recommended to establish different time frames for diagnosis, as well as criteria and conditions for follow-up and avoid delays in diagnosis as much as possible.

Another study by<sup>5</sup> regarding Fabry disease (FD), which is a rare disease linked to the A (AGAL-A). ERT has been shown to reduce symptoms, improve quality of life (QoL), and improve clinical signs and biochemical markers of disease. Starting ERT in childhood can slow or even stop progressive organ damage. Efforts to prevent FD from childhood are believed to be able to avoid organ damage in the future. This prompted a working group of French experts to collaborate and develop

recommendations for the treatment and monitoring of children with FD. Organ evaluation should begin at age 5 years for asymptomatic boys (age 12–15 years for asymptomatic girls), and immediately for children diagnosed through symptoms. The kidney, heart, nervous, and gastrointestinal systems should be evaluated, as well as bones, skin, eyes, hearing, and quality of life. Use of the plasma biomarker globotriaosylsphingosine may also be helpful. Early diagnosis and management of FD is a promising strategy to reduce organ damage, morbidity, and premature death in adulthood.

Regarding early diagnosis of children's illnesses, it is not easy, because children sometimes cannot express the pain they are suffering clearly and the symptoms are not very visible. This is a challenge for doctors to diagnose diseases experienced by children. Based on the explanation above, the author wants to examine in more depth the "Challenges in Early Diagnosis of Childhood Diseases: The Role of Routine Examinations and Early Detection."

## **2. METHODS**

This research applies qualitative research methods, namely an approach used to understand social events from a subjective, complex and in-depth perspective. This approach emphasizes understanding the meaning contained in human experience, behavior and interactions. Qualitative methods often utilize observation, question and answer techniques, and text analysis to collect data that is descriptive and cannot be measured numerically<sup>19</sup>. The data collection method in this research was carried out through literature studies obtained from Google Scholar. This allows researchers to gain a comprehensive understanding of the research topic, explore existing theories, and find empirical evidence that supports the arguments put forward. After the data was collected, analysis was carried out in

three stages, namely data reduction, data presentation, and drawing conclusions

### **3. DISCUSSION**

#### **1. Asthma**

Research conducted in Africa by<sup>10</sup> found that the causes of low rates of asthma diagnosis include a lack of public knowledge and understanding of the condition, limited access to health services, inadequate health systems, minimal use of diagnostic tests such as spirometry, limited knowledge among health workers, and lack of implementation of asthma guidelines. Efforts to improve asthma diagnosis include educational programs involving communities and schools, improving asthma diagnostic terminology, developing and implementing appropriate guidelines, and strengthening health systems.

#### **2. Tuberculosis (TB)**

Tuberculosis (TB) is an infectious disease that has complex challenges, both in terms of diagnosis, management and prevention efforts that have not yet met targets. TB morbidity and mortality rates remain high. The difficulty in definitive diagnosis is caused by the difficulty in detecting *M. tuberculosis*. The scoring system also has its weaknesses. Apart from challenges in diagnosis, another issue is the success rate of therapy. Apart from antituberculosis drug factors, the success of TB therapy is influenced by individual factors of the sufferer and *M. tuberculosis* itself. Therefore, even if the patient has undergone therapy for at least six months, recovery cannot be guaranteed. Therefore, the decision to stop TB therapy becomes difficult and problematic because of the impact on the patient's well-being. Stopping therapy while *M. tuberculosis* is still present risks prolonging the infection. On the other hand, continuing therapy when all *M. tuberculosis* has been eradicated risks ongoing drug side effects. Therefore, the decision to discontinue or continue therapy should be based on a more accurate diagnosis. The priority in

prevention is finding and treating adult TB sufferers who act as sources of transmission<sup>3</sup>. Diagnosing TB in children is difficult because the symptoms are often atypical, and bacteriology and microbiology laboratory tests are difficult because children do not yet produce cells that can indicate the presence of *M. tuberculosis*. However, with the existence of INF (Interferon gamma) technology, which is a laboratory examination that measures the body's immune reaction to *M. tuberculosis*, early detection can be carried out.

#### **3. Retinoblastoma**

Retinoblastoma is the most common intraocular tumor in newborns and children, with an incidence of approximately 1 per 15,000-20,000 births and approximately 3% of total cancer cases in children. Delays in diagnosis and treatment of retinoblastoma in developing countries, including Indonesia, can result in the spread of cancer outside the eye, vision loss and death. About half of children diagnosed with retinoblastoma in developing countries die, thought to be because the diagnosis is made when the cancer is already advanced, while only 3-4% of children diagnosed in developed countries (such as America and Europe) die because of earlier diagnosis. and more comprehensive treatment.

Barriers to early diagnosis in developing countries include inadequate health insurance systems, lack of communication and cooperation between relevant parties, limited diagnostic equipment, and inefficient referral systems. Other barriers include educational, cultural, and economic factors. Optimal treatment for retinoblastoma is a complex process that requires collaboration from a multidisciplinary team from various scientific fields. However, forming such teams is often faced with challenges, especially in areas with limited resources<sup>4</sup>.

#### **4. Covid-19**

Covid-19 in children has several differences in characteristics compared to adults, both in terms of clinical symptoms and laboratory test results. Challenges also arise in diagnosing Covid-19 in children because they are often unable to explain their symptoms clearly. Although laboratory tests are used to verify the diagnosis, their accuracy remains a question. A total of 40 patients have been confirmed positive for Covid-19 via PCR tests. Compared with rapid antibody tests, chest x-ray shows better sensitivity and specificity for initial screening. Complete blood count results generally showed normal results, with a relatively small incidence of lymphocytosis. However, the pattern of neutrophilia and lymphopenia that commonly occurs in adults with Covid-19 is different from the findings in children. Although increased NLR is often used as an initial screening test in adults with Covid-19, it cannot be used in children. This may be due to a lower inflammatory response and a physiologically higher lymphocyte cell count at a younger age. Therefore, although laboratory tests should be carried out in cases of Covid-19 in children, they do not always confirm the diagnosis with certainty<sup>1</sup>.

#### **Challenges of Early Diagnosis of Childhood Diseases**

From the several cases above, it can be concluded that there are challenges experienced in early diagnosis of children's diseases. The following are challenges that are often faced in early diagnosis of childhood diseases.

#### **Limitations of Examination Methods**

Examination is an important thing to do to detect disease. The purpose of routine examinations is to periodically monitor a person's development and general health. Routine examinations can help detect health problems early, provide opportunities for preventive interventions,

and enable health care providers to provide appropriate advice and recommendations to maintain health and prevent disease. Regular examinations are also important to monitor the response to treatment or care being carried out and to ensure that the individual remains healthy and functioning well physically and mentally<sup>6</sup>.

Examinations are usually carried out by visiting a health facility near the house. However, not all health facilities provide complete equipment. This can be one of the challenges in early diagnosis of children's diseases because of limited access to the required diagnostic equipment. When health facilities are not equipped with adequate equipment, diagnosis can be delayed or inaccurate, resulting in delays in necessary treatment. Additionally, a lack of complete equipment can also hinder doctors' ability to provide timely and quality care to pediatric patients. Therefore, it is important to increase accessibility to health facilities that are equipped with adequate equipment, especially in areas that have low levels of accessibility<sup>8</sup>.

#### **Delay in Identification of Symptoms**

Delay in identifying symptoms is a serious challenge in early diagnosis of childhood diseases. Symptoms of illness in children are often not immediately visible or are often misinterpreted as general health problems<sup>15</sup>. Parents or caregivers often ignore early symptoms that may occur in children, or these symptoms are not considered serious so they do not receive immediate medical attention. This can result in delays in treating the disease and increase the risk of serious complications. Therefore, it is important to increase awareness of parents, caregivers and health workers regarding the symptoms of disease that need to be paid attention to in children and the importance of fast and appropriate medical treatment.

Identifying symptoms of disease in children has an important role in maintaining their health. Symptoms

detected early can allow the disease to be treated before it becomes more serious. By recognizing early symptoms, a diagnosis can be made more quickly, allowing for timely treatment, and reducing the risk of complications. In addition, identifying symptoms also helps in preventing the spread of the disease to other people and gives parents or caregivers peace of mind to take appropriate action. Therefore, it is important to increase awareness of the symptoms of disease and the importance of a quick response to symptoms that appear in children<sup>17</sup>.

### **Environmental and Social Factors**

Environmental and social factors play an important role in the challenges of early diagnosis of childhood diseases. The living environment, air quality, sanitation, access to health services, and nutrition can affect children's health directly or indirectly, thereby affecting the ability of parents or health care providers to quickly detect symptoms of illness in children. Apart from that, social factors such as education, family economic status, and social support can also influence access to health services and parents' understanding of the importance of routine health checks and recognizing symptoms of illness in children. Therefore, awareness of the role of environmental and social factors in the process of early diagnosis of children's diseases is very important to increase the effectiveness of children's health management<sup>7</sup>.

### **Efforts That Can Be Done in Early Diagnosis of Childhood Diseases**

#### **1. Routine Checkup**

Routine examinations of children have an important role in maintaining health and detecting potential health problems early. Through this examination, doctors can monitor the child's physical, mental and emotional development, as well as detect symptoms of disease or health problems early on. Apart from that, routine check-ups also provide an opportunity for parents

or guardians to consult with a doctor about their child's growth, development and eating patterns. With regular routine examinations, diseases can be identified early and preventive or intervention measures can be taken in a timely manner, thereby helping to maintain children's health and preventing the possibility of more serious complications in the future<sup>12</sup>.

Routine examinations that can be carried out include physical examinations, such as measuring weight, height and head circumference to monitor the child's growth. Apart from that, the examination also includes an evaluation of motoric development, language development and cognitive development according to the child's age. Routine examinations also include checking immunizations to ensure children receive vaccinations according to the recommended schedule. Apart from that, doctors can also carry out routine examinations to detect certain health problems that are specific to the child's age and risk, such as eye and hearing examinations, dental and mouth examinations, and heart and lung examinations. By carrying out regular check-ups, children can be monitored well and health problems can be identified early.

#### **2. Early detection**

The role of early detection is very important in maintaining children's health. Through early detection, health problems can be identified early, allowing appropriate intervention and treatment to be carried out more quickly. This helps prevent the disease from becoming more serious or even avoid more serious complications in the future. Early detection also makes it possible to provide more effective treatment and increase the chances of recovery. Thus, early detection is not only important to prevent disease, but also to improve children's quality of life and minimize its negative impact on their growth and development.

Disease screening is a systematic examination process of individuals or

populations to detect the presence of certain diseases or medical conditions early, even before symptoms appear. The main goal of screening is to identify individuals who are at high risk of developing a disease or condition, so that they can immediately undergo further evaluation or receive necessary treatment. Disease screening can be done using a variety of methods, including laboratory tests, physical examinations, and health questionnaires. This helps in effective prevention, control and management of disease, as well as increasing public awareness about the importance of early detection in maintaining health<sup>18</sup>.

Screening methods are the process of identifying and selecting individuals or populations who are at high risk of developing a particular disease or condition. This method is carried out using certain tests or evaluations to detect early signs of disease or risk factors that may lead to the development of disease in the future. Screening aims to identify cases that require further intervention, such as further diagnosis or preventive disease management, thereby allowing early action that can improve the prognosis and reduce the burden of disease. Screening methods can take the form of laboratory tests, physical examinations, questionnaires, or a combination of these methods, depending on the disease or condition being targeted<sup>14</sup>.

### **3. Increasing Public Education and Awareness**

Increasing the awareness of parents and medical personnel about the symptoms of children's illnesses that may have been overlooked is a crucial step in efforts to prevent and treat children's illnesses early. Educated parents will be better able to recognize the early symptoms of illness in their children, so they can immediately seek medical help if necessary. On the other hand, medical personnel who understand the symptoms of children's illnesses that are often overlooked will be able to provide better and more timely

health services. Public education and awareness about this can reduce the risk of complications and improve the prognosis and quality of life for children<sup>2</sup>.

Public education and awareness are important efforts to increase understanding and knowledge about health and promote healthy behavior in society. Through education, individuals and communities can learn ways to prevent disease, recognize early symptoms of disease, and access health services appropriately. Public awareness about the importance of a healthy lifestyle, timely health care, and disease prevention can help reduce morbidity and death rates caused by certain diseases. By increasing public awareness, it is hoped that people can proactively take steps to maintain their health and improve their quality of life.

### **4. CONCLUSION**

In facing the challenge of early diagnosis of children's diseases, the role of routine examinations and early detection is an important key in efforts to prevent and overcome children's health problems. Regularly scheduled routine examinations help identify early symptoms of disease early, making it possible to carry out timely preventive or intervention measures. In addition, early detection plays a very important role in recognizing potential disease risks early, allowing for more effective treatment and avoidance of more serious complications. However, challenges such as limited access to complete health facilities, delays in identifying symptoms, and environmental and social factors can hinder early detection efforts. Therefore, it is important to increase public awareness about the symptoms of childhood illnesses and the importance of routine examinations as a preventive measure that can improve children's overall health.

Suggestions for improving the quality of children's health services are to pay more attention to parental education and training of medical personnel. This may

include outreach campaigns to parents about the basic principles of child health care, recognition of the symptoms of common illnesses in children, and the importance of obtaining timely medical care. In addition, it is necessary to carry out regular training for medical personnel to update their knowledge and skills in diagnosing and treating children's diseases effectively. Thus, improving the quality of children's health services can be achieved through collaborative efforts between the government, health institutions and society as a whole.

The development of new technology is important to help early diagnosis of childhood diseases. Innovations in medical technology, such as the development of more sophisticated and sensitive diagnostic tools, as well as information technology applications that enable the exchange of medical data quickly and efficiently, can speed up the process of identifying diseases in children. Apart from that, technological developments in the field of telemedicine can also enable wider access to children's health services, especially for those who live in remote or hard-to-reach areas. Thus, technological development can play an important role in improving the health system's ability to carry out early diagnosis of childhood illnesses and provide appropriate and effective treatment.

## REFERENSI

1. Abdillah Maulana, Satrioaji. (2020). Hang luck medical journal. *Hang Tuah Medical Journal* , 18 (1), 35–46.
2. Amelia, Reza, Labellapansa, Ause, & Siswanto, Apri. (2018). Expert System as a Tool for Approaching the Diagnosis of Thalassemia in Children Using the Dempster-Shafer Method. *It Journal Research and Development* , 2 (2), 14–23. [https://doi.org/10.25299/itjrd.2018.vol2\(2\).1034](https://doi.org/10.25299/itjrd.2018.vol2(2).1034)
3. Bakhtiar, Bakhtiar. (2018). Challenges in the Diagnosis and Management of Tuberculosis in Children. *J. Ked. N. Med* , Vol. 1, pp. 27–33.
4. Bakry, Mohammad Haikal, & Rahmadhany, Riana. (2019). Retinoblastoma: Problems and obstacles in diagnosis. *Journal of Biomedicine and Health* , 2 (4), 162–168. <https://doi.org/10.18051/jbiomedkes.2019.v2.162-168>
5. Germain, Dominique P., Fouilhoux, Alain, Decramer, Stéphane, Tardieu, Marine, Pillet, Pascal, Fila, Marc, Rivera, Serge, Deschênes, Georges, & Lacombe, Didier. (2019). Consensus recommendations for diagnosis, management and treatment of Fabry disease in pediatric patients. *Clinical Genetics* , 96 (2), 107–117. <https://doi.org/10.1111/cge.13546>
6. Ghaffar, Ahmed Abdel. (2023). *ROUTINE WEIGHT AND HEIGHT CHECK AS AN EFFORT TO OPTIMIZE CHILDREN'S GROWTH AND DEVELOPMENT* . 3 (2).
7. Hasnidar, T. (2020). *Full Book of Public Health Science\_compressed* . Retrieved from [https://ecampus.poltekkes-medan.ac.id/jspui/bitstream/123456789/6074/3/FullBookKesMasScience\\_compressed.pdf](https://ecampus.poltekkes-medan.ac.id/jspui/bitstream/123456789/6074/3/FullBookKesMasScience_compressed.pdf)
8. Hermawan, Endang, & Sulastri, Rini. (2023). Community Empowerment: The Importance of Fulfilling Community Basic Needs. *Distinction: Journal of Digital Society* , 1 (3), 1–6.
9. Kristanty, Diyah. (2023). Early Detection of Thalassemia. *Pratista Pathology* , 8 (1), 17–28.
10. Magwenzi, P., Rusakaniko, S., Sibanda, E.N., & Gumbo, F.Z. (2022). Challenges in the diagnosis of asthma in children, what are the solutions? A scoping review of 3 countries in sub-Saharan Africa. *Respiratory Research* , 23 (1), 1–11. <https://doi.org/10.1186/s12931-022-02170-y>
11. Martín-de-Carpi, Javier, Treviño,

- Santiago Jiménez, Muncunill, Gemma Pujol, Martín-Masot, Rafael, & Navas-López, Víctor Manuel. (2020). Time to diagnosis in pediatric inflammatory bowel disease: Key points for an early diagnosis. *Anales de Pediatría (English Edition)* , 92 (4), 242.e1-242.e9. <https://doi.org/10.1016/j.anpede.2019.11.004>
12. Munawaroh, Siti. (2024). *Kindergarten Student Health Examination as an Early Detection Effort* . 6 (1), 1–7.
  13. Pediasure. (2023). Getting to know silent disease in children and how to treat it. Retrieved from <https://pediasure.co.id/article/silent-disease-ilah>
  14. Sari, Welan, & Tampubolon, Puteri. (2018). *Republic of Indonesia Ministry of Health Health Polytechnic Midwifery Department Medan D-IV Midwifery Study Program 2018* .
  15. Sianipar, Jojo Jennifer, Furqon, M. Tanzil, & Adikara, Putra Pandu. (2017). Identification of the Diagnosis of Autism Disorder in Children Using the Modified K-Nearest Neighbor (MKNN) Method. *Journal of Information Technology and Computer Science Development* , 1 (9), 825–831.
  16. Tiara, Putri Prima, & Lasnawati, Lasnawati. (2022). The Meaning of a Healthy Lifestyle from the Perspective of Symbolic Interactionism Theory. *Humantech: Indonesian Multidisciplinary Scientific Journal* , 1 (11), 1627–1638.
  17. Ufiyah Ramlah. (2021). Health Problems in Early Childhood Due to Malnutrition and Efforts to Prevent Them. *Ana' Bulava: Journal of Childhood Education* , 2 (2), 12–25. <https://doi.org/10.24239/abulava.vol2.is2.40>
  18. Umami, Desi Aulia. (2019). Non-experimental quantitative. *Jm* , 7 (12), 9–18.
  19. Waruwu, Marinu. (2023). Educational Research Approaches: Qualitative Research Methods, Quantitative Research Methods and Mixed Methods. *Tambusai Education Journal* , 7 (1), 2896–2910.