

Prevalence of Congenital Cataracts in the Eye Clinic of the NTB Provincial Hospital in 2023-2025

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Abstract

Background: Congenital cataract is one of the causes of visual impairment in children and may result in permanent visual impairment if not diagnosed and treated early. Data regarding the prevalence of congenital cataract at the regional level, particularly in West Nusa Tenggara, remain limited. This study aimed to determine the prevalence and characteristics of patients with congenital cataract at the Ophthalmology Clinic of West Nusa Tenggara Provincial Hospital during 2023–2025. Methods: This was a descriptive observational study with a cross-sectional design using secondary data from medical records. Patients diagnosed with congenital cataract at the Ophthalmology Clinic of West Nusa Tenggara Provincial Hospital from January 2023 to December 2025 were included using total sampling. The variables analyzed were age at diagnosis, sex, and cataract laterality. Data were analyzed descriptively and presented as frequencies and percentages. The prevalence was calculated based on the number of patients with congenital cataract divided by the total number of patients visiting the Ophthalmology Clinic during the study period. Results: A total of 55 patients with congenital cataract were identified among 5,745 patients visiting the Ophthalmology Clinic, resulting in a prevalence of 0.96%. Male patients were more predominant than female patients, with 32 (58.2%) and 23 (41.8%) patients, respectively. Regarding age at diagnosis, patients aged <6 months constituted the largest group, with 14 patients (25.5%), while those aged ≥5 years represented the smallest group, with 6 patients (10.9%). Overall, 27 patients (49.1%) were diagnosed during the first year of life. Bilateral cataract was the most common laterality, occurring in 32 patients (58.2%), while unilateral cataract was found in 23 patients (41.8%). Conclusion: The prevalence of congenital cataract at the Ophthalmology Clinic of West Nusa Tenggara Provincial Hospital during 2023–2025 was 0.96%. Patients were predominantly male, bilateral cataract was the most common presentation, and nearly half of the cases were diagnosed within the first year of life. These findings highlight the importance of strengthening early detection and diagnosis to facilitate timely management of congenital cataract.

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1. INTRODUCTION

Congenital cataracts are clouding of the lens that is present from birth or diagnosed in infants up to one year of age due to impaired lens development during the embryonic period (Djamil et al., 2023; Tătaru et al., 2020). This condition can be caused by various factors, including genetic abnormalities and intrauterine infections, especially TORCH

(*Toxoplasma gondii*, *Rubella*, *Cytomegalovirus*, And *Herpes simplex*), metabolic disorders such as galactosemia, and maternal factors during pregnancy such as diabetes, malnutrition, use of certain medications, and exposure to teratogenic substances (Bell et al., 2020; Imelda & Hermaya, 2022; Khurana, 2007). Congenital cataracts are a major cause of preventable visual impairment in children if detected and treated early (Bell et al., 2020).

Vision is the primary source of sensory input that supports a child's growth and development, including visual, motor, and cognitive skills. Early visual impairment can hinder the development of these skills and have long-term negative psychosocial impacts (Mulyani et al., 2024). Congenital cataracts, a leading cause of visual impairment and blindness in children, require prompt detection and treatment to prevent permanent vision loss. It is estimated that 20,000–40,000 babies are born with congenital cataracts each year worldwide, and approximately 5–20% of childhood blindness is caused by congenital cataracts (Wadhwani et al., 2021).

Data on the incidence and prevalence of congenital cataracts in Indonesia are still limited, especially at the regional level. Information on the prevalence of congenital cataracts is needed to illustrate the magnitude of the disease burden, evaluate the need for pediatric eye health services, and serve as a basis for planning early detection and treatment programs for childhood blindness. Several studies in Indonesia indicate that congenital cataracts remain a relatively common problem. A study at Cicendo Eye Hospital in Bandung from 2017–2019 reported 224 cases of cataracts in children, with 94.64% of these being congenital (Lahira & Amiruddin, 2021). Meanwhile, a study by Salsabilla et al. (2021) at the West Nusa Tenggara Provincial Hospital (RSUD) reported 40 cases of congenital cataracts in the 2018–2019 period.

Although there have been reports regarding the number of congenital cataract cases at the NTB Provincial Hospital in the 2018–2019 period, there is currently no data available describing the prevalence of congenital cataract patients in the Eye Clinic of the NTB Provincial Hospital in the 2023–2025 period. As the main referral hospital in West Nusa Tenggara Province, the NTB Provincial Hospital receives patient referrals from various districts/cities, so the prevalence data obtained can provide an up-to-date picture of the caseload handled. The availability of this data is important as a basis for evaluating pediatric eye health services, planning service needs, and developing programs for preventing childhood blindness in West Nusa Tenggara Province.

Therefore, this study was conducted to determine the prevalence of congenital cataracts in the Eye Clinic of the West Nusa Tenggara Provincial Hospital for the period 2023–2025. The results are expected to provide up-to-date prevalence data that will serve as a basis for evaluating pediatric eye health services, developing early detection and blindness prevention programs, and serving as a reference for further research in West Nusa Tenggara Province.

2. RESEARCH METHODS

This research is a descriptive observational study with a cross-sectional design *that* used secondary data in the form of medical records of patients diagnosed with congenital cataracts. The study was conducted at the Eye Clinic of the NTB Provincial Hospital. Data collection was conducted from December 2025 to August 2026 after obtaining approval from the Ethics Committee of the Faculty of Medicine, University of Mataram. The data used were medical records of patients diagnosed with congenital cataracts during the period January 2023 to December 2025.

The study population was all patients diagnosed with congenital cataracts and recorded in the medical records at the Eye Clinic of the NTB Provincial Hospital during the period of January 2023 to December 2025. The study sample was taken using a total sampling technique; namely, all patients who met the study criteria during that period were included as samples. The inclusion criteria in this study were patients diagnosed with congenital cataracts at the Eye Clinic of the NTB Provincial Hospital during the study period, with medical record data containing information on age at diagnosis, gender, and laterality of cataracts. Patients with incomplete data on the study variables were excluded.

The variables studied included patient age at diagnosis of congenital cataract, gender, and laterality of the cataract. Furthermore, the number of patients diagnosed with congenital cataract and the total number of patients visiting the Eye Clinic during the study period were used as the basis for calculating prevalence. Data were obtained through medical record searches in accordance with the study criteria, then recorded and grouped based on the variables studied. Data analysis was conducted descriptively and presented in the form of frequency distributions and percentages.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research result

Table 1. Prevalence of Congenital Cataracts in the Eye Clinic of the NTB Provincial Hospital for the Period 2023–2025

Number of congenital cataract patients	Number of patients at the NTB General Hospital Eye Clinic 2023-2025	Percentage
55	5745	0,96%

Based on Table 1, the prevalence of congenital cataracts in the Eye Polyclinic of the NTB Provincial Hospital during the period 2023–2025 was 0.96%, which was obtained from a comparison of 55 congenital cataract patients with 5,745 total patients in the Eye Polyclinic of the NTB Provincial Hospital in 2023–2025.

Table 2. Characteristics of Congenital Cataract Patients at the Eye Clinic of the NTB Provincial Hospital for the Period 2023–2025

Characteristics	Amount	Percentage
Gender		
Man	32	58,2%
Woman	23	41,8%
Age at diagnosis		
< 6 months	14	25,5%
6-11 months	12	21,8%
1-2 years	11	20%
3-4 years	11	20%
≥ 5 years	6	10.9%
Cataract laterality		
Mata bilateral	32	58,2%
Right eye	11	20%

Left eye	12	21,8%
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Based on Table 2, congenital cataract patients were more likely to be male, namely 32 patients (58.2%), compared to females, as many as 23 patients (41.8%). Based on age at diagnosis, the age group <6 months was the largest group, namely 14 patients (25.5%), while the age group ≥5 years was the smallest, namely 6 patients (10.9%). Based on laterality, most patients experienced bilateral cataracts, as many as 32 patients (58.2%), while unilateral cataracts were found in 23 patients (41.8%), consisting of 11 patients (20.0%) with right eye involvement and 12 patients (21.8%) with left eye involvement.

3.2. Discussion

This study identified 55 cases of congenital cataracts out of a total of 5,745 patients visiting the Eye Clinic of the West Nusa Tenggara Provincial Hospital during the period 2023–2025, resulting in a prevalence of congenital cataracts of 0.96%. This figure indicates that congenital cataracts are relatively rare compared to all eye disease cases treated at the clinic. Despite their relatively low prevalence, congenital cataracts still have a significant impact on children's quality of life if not diagnosed and treated early because they can hinder the development of visual function.

The results of this study can be compared with those of Lahira and Amiruddin (2021) at Cicendo Eye Hospital in Bandung, which reported 224 cases of cataracts in children during the 2017–2019 period, with 94.64% of these being congenital cataracts. Furthermore, Salsabilla et al. (2021) at the NTB Provincial Hospital reported 40 cases of congenital cataracts in the 2018–2019 period. The number of cases in this study was higher than in the previous period. This difference may be influenced by differences in the study period, referral patterns, increased case detection, and changes in the number of patient visits to the hospital. However, the results of this study need to be interpreted with caution because the prevalence was calculated based on all patient visits to the eye clinic (*hospital-based prevalence*), so it cannot be compared directly with general population-based studies or the number of live births as a denominator.

Most patients in this study were diagnosed in the first year of life, totaling 27 patients (49.1%). The largest age group was <6 months (25.5%), followed by 6–11 months (21.8%). This finding indicates that nearly half of the patients were identified in the first year of life. However, 30 patients (54.5%) were diagnosed after the age of one year. Delayed diagnosis may be influenced by the lack of red reflex screening in newborns, poor parental knowledge of the early signs of congenital cataracts, delayed referral from primary health care facilities, and limited access to eye health services, especially in areas with geographical barriers. Early diagnosis and treatment are crucial to reduce the risk of amblyopia and permanent visual impairment.

Based on gender, there were more male patients than female patients, with 32 patients (58.2%) and 23 patients (41.8%), respectively. These results align with research by Lahira and Amiruddin (2021), which reported that 54.02% of pediatric cataract patients were male, and research at Dr. M. Djamil Padang General Hospital showed a male proportion of 62.1%. However, the predominance of male patients in this study likely reflects variation in sample distribution and does not indicate that gender is a primary risk factor for congenital cataracts. Most causes of congenital cataracts, such as genetic abnormalities, intrauterine infections, and metabolic disorders, can occur in both males and females.

Most patients had bilateral congenital cataracts (CD), with 32 patients (58.2%). Meanwhile, unilateral cataracts were found in 23 patients (41.8%), consisting of 11

patients (20.0%) with right eye involvement (OD) and 12 patients (21.8%) with left eye involvement (OS). These findings indicate that bilateral eye involvement is more common than single eye involvement. These results are in line with a *systematic review* and *meta-analysis* Wu et al. (2016) reported that 54.3% of congenital cataract cases were bilateral and 45.4% were unilateral. The predominance of bilateral cases may be related to etiologies that affect the development of both lenses, such as genetic factors, intrauterine infections, chromosomal abnormalities, and metabolic disorders.

Congenital cataracts have a multifactorial etiology, including genetic, prenatal, perinatal, infectious, and metabolic factors. Several factors have been reported to be associated with the incidence of congenital cataracts, including low birth weight, prematurity, maternal diabetes, intrauterine infection, especially rubella, and genetic and metabolic disorders such as galactosemia (Haargaard et al., 2005; Pichi et al., 2016). Haargaard et al. (2005) reported that low birth weight, particularly <2,000 grams, is associated with an increased risk of bilateral congenital cataracts. Genetic factors are also an important cause, especially in bilateral cases, and may involve various genes that play a role in lens development and transparency (Pichi et al., 2016; Bell et al., 2020). However, these factors could not be analyzed further in this study because the study focused on prevalence and patient characteristics. Therefore, further research is needed to identify risk factors for congenital cataracts in the NTB population, including birth history, prematurity, maternal infection, metabolic disease, and family history.

The prevalence obtained in this study is likely influenced by the characteristics of the NTB Provincial Hospital as a provincial-level referral hospital that receives patients from various districts/cities in West Nusa Tenggara. As a referral hospital, the availability of diagnostic facilities and ophthalmologists allows for more congenital cataract cases to be identified and recorded in medical records. On the other hand, limited access to health services, especially in areas with geographical barriers, may result in some cases going undiagnosed or not reaching the referral hospital. Therefore, the prevalence obtained more closely reflects the caseload at that service facility and may not necessarily reflect the prevalence of congenital cataracts in the entire population of West Nusa Tenggara.

The results of this study demonstrate the importance of strengthening early detection of congenital cataracts at the NTB Provincial Hospital to prevent permanent vision impairment. Screening can be performed through a red reflex examination (*red reflex test*) in newborns. Reflexes that are asymmetrical, reduced, absent, or appear white (*leukocoria*) should be suspected as an optic media disorder and should be followed up with an ophthalmologist's examination (American Academy of Pediatrics, 2008; Rajavi & Sabbaghi, 2016). In addition to screening, educating parents about early signs is also important. Signs to watch for include leukocoria, difficulty following objects or making eye contact, photophobia, strabismus, and nystagmus (Khokhar et al., 2017). Zhu et al. (2017) reported leukocoria as one of the main complaints in children with congenital cataracts, while strabismus and nystagmus were found in 20.6% and 11.9% of patients, respectively. If suspicious signs are found, the diagnosis is confirmed through anamnesis and ophthalmologic examination, including neonatal history, maternal infection, and family history, as well as a slit-lamp examination to assess cataract characteristics (Self et al., 2020; Long et al., 2017). Therefore, neonatal screening, parental education, detection by health workers, and a rapid referral system need to be strengthened so that diagnosis and management can be carried out as early as possible, especially considering that patients were still diagnosed after the age of one year in this study.

4. CONCLUSION

This study provides an overview of the prevalence and characteristics of congenital cataract patients at the Eye Clinic of the West Nusa Tenggara Provincial Hospital for the period 2023–2025. The prevalence of congenital cataracts was 0.96%, with a higher proportion of patients being male, nearly half of cases diagnosed in the first year of life, and the majority experiencing bilateral cataracts. The results of this study are in accordance with the research objective of describing the prevalence and characteristics of congenital cataract patients during that period. The data obtained can be used as a basis for evaluating pediatric eye health services, especially in efforts to improve early detection and diagnosis. Future research is expected to cover a wider population and examine the etiology and risk factors of congenital cataracts to obtain a more complete picture of this condition in West Nusa Tenggara.

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