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Characteristics of patients with cleft lip and palate during the community services in East Nusa Tenggara, Indonesia, 2017-2018

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Abstract

Background: Cleft lip and palate is a congenital abnormality that occurs early in during embryonic development. This disorder can cause speech, hearing, malnutrition and mental and social development disorders. The prevalence of cleft lip and palate in the world varies greatly, with the highest incidence rate in Asia.

Purpose: This research aims to determine the characteristics of patients with cleft lip and palate during ~~the~~ community services in East Nusa Tenggara, Indonesia, from 2017 to 2018.

Methods: The type of research is descriptive research with a population of 48 patients who attended the community service event for cleft lip and palate surgery. Patient data characteristics were grouped based on age, gender, and cleft lip and palate type.

Results: The distribution of patients with cleft palate was mostly aged 0-5 years (47%), the gender was the same between men and women (50%), and the most common type of cleft palate was cleft of the anterior (primary) palate (54%).

Conclusion: Understanding cleft lip and palate patients in East Nusa Tenggara helps determine incidence rates and risk factors. This helps in customizing services, facilitating educational efforts, and involving the local government for effective community support.

Keywords: Cleft lip and palate; Labioplasty; Palatoplasty; Surgery; Community service

1. Introduction

The prevalence of cleft palate varies in different regions around the world. Study results indicate that the population in Asia has a relatively high incidence rate of approximately 2/1000 births. In the Philippines, the incidence of cleft palate ranges between 1/500 and 1/625 births,; in Japan, the incidence reaches 1.1 to 2.13/1000 births,; and in South Korea, it reaches 1.81/1000, or 1 in 55 births [1-3].

The prevalence of cleft lip and palate in Indonesia is around 1:1,596. The types of clefts are divided into cleft lip and palate at 50.53%, cleft lip only at 24.42%, and cleft palate only at 25.05%. Based on gender, there are more male patients

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(55.95%) than female patients (44.05%). A family history of the same cleft is present in 20.08%, with a higher prevalence in lower-income families [4].

Cleft lip and/or cleft palate are congenital disorders that occur in the early stages of during embryonic development. Anatomic segmentation into the prepalate and the palate allows for the classification into four major categories of orofacial clefts in the American Cleft Palate–Craniofacial Association (ACPA) classification: (1) Cleft of the anterior (primary) palate, (2) Cleft of the anterior and posterior (primary and secondary palate), (3) Cleft of the posterior (secondary) palate, and (4) Facial clefts. The causes of cleft palate are disruptions in teratogenic factors that affect the development of the lip or palate, resulting in cracks [5]. Several factors influence the occurrence of cleft palate, including genetic and environmental factors such as maternal illness, malnutrition, medications, smoking, and alcohol. In most cases, cleft palate is unilateral, but bilateral cases may also occur [6,7]. Children with a cleft palate may experience speech, hearing, nutritional, and mental and social developmental disorders [8].

Low nutritional status in children with a cleft palate can be caused by difficulties eating due to defects in the mouth, leading to inadequate nutritional intake. They tend to lack macro-nutrients (energy, protein, fats, and carbohydrates) as well as micro-nutrients (calcium, iron, and phosphorus) [9]. This can result in nutritional deficiencies, growth stunting, delayed closure of lip or palate wounds, and dental damage. Therefore, it is important to assess the nutritional status of children with a cleft palate to observe growth patterns and their nutritional needs. To address nutritional deficiencies in children, the role of parents is crucial in providing appropriate nutrition to optimize their health [10].

2. Material and methods

This study is a descriptive research type, with a population of 48 patients with cleft palates examined from 2017 to 2018. The research sample was determined using the purposive sampling technique with inclusion criteria, including patients residing in the East Nusa Tenggara region, with complete patient and parental identity data. The obtained data were grouped based on the region of origin, which was then presented in the form of a map to illustrate the distribution of patients with cleft palates. Additionally, patient data characteristics were grouped based on age, gender, and cleft lip and palate type.

3. Results and discussion

The research results indicate the incidence of cleft palate from 2017 to 2018, involving a total of 48 patients with cleft palate. Table 1 presents the distribution of cleft palate patients in the East Nusa Tenggara region based on age, gender, and cleft palate type.

Table 1 Demographic Characteristics in 48 Patients

Descriptor	**Patients, No. (%)**
Age, years	
0-5	23 (47)
6-11	5 (10)
12-16	2 (4)
17-25	3 (6)
26-35	1 (2)
>35	0 (0)
Gender	
Male	24 (50)
Female	24 (50)
Diagnosis (type of cleft palate)	
Cleft of the anterior (primary palate)	26 (54)
Cleft of the anterior and posterior (primary and secondary palate)	9 (19)

Cleft of posterior (secondary)	14 (29)
Facial clefts	0 (0)

Distribution of patients based on age indicates that patients aged 0-5 years are the most affected by cleft palate, accounting for 47% (23 patients), while those aged 26-35 years are the least affected, with only 2% (1 patient), as shown in Figure 1 and Table 1. Most patients with cleft lip and palate undergo surgery at the age of 0-5 years (47%). This aligns with Shaffer et al., research, reporting that 68.1% of 232 children with non-syndromic cleft palates who underwent palatoplasty were aged below 5 years [11]. Early surgery is recommended by the American Cleft Palate-Craniofacial Association, with labioplasty ideally performed after 10 weeks and palatoplasty after 18 months. Early intervention helps prevent the development of pathological speech. Clefts in the palate can affect speech abilities, making speech therapy advisable after palatoplasty to ensure normal speech development [12,13].

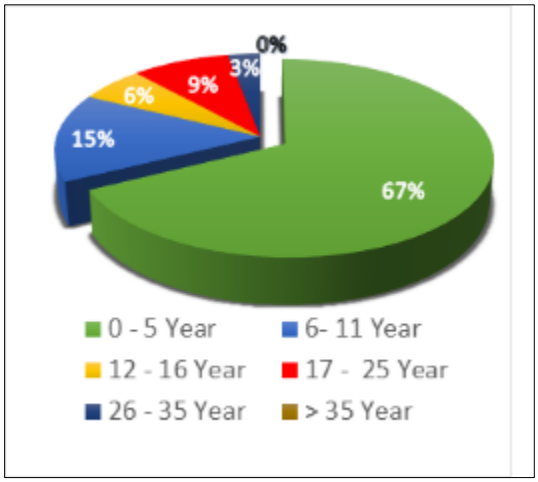

Figure 1 Distribution of the age at the time of surgery for patients with cleft lip and palate

Based on gender, there is an equal number of male and female patients, each comprising 24 individuals, as depicted in Figure 2 and Table 1. The research indicates that there is no significant difference in the severity of cleft palates between females and males. This finding is consistent with Ueda et al.'s study, which showed no difference in the severity of cleft based on gender [14] However, Yilmas et al. reported a higher prevalence of cleft palate in males (54.2%) compared to females (45.8%) [15], suggesting a potential gender-related influence on the development of the condition due to hormonal and developmental differences [16].

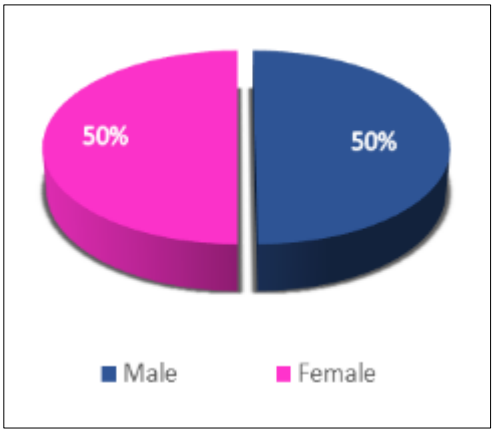

Figure 2 Distribution of gender in surgery for patients with cleft lip and palate

Based on the type of cleft palate, the most commonly encountered is the cleft of the anterior (primary) palate, accounting for 54% (26 patients), while the least common is the cleft of the anterior and posterior (primary and secondary palate) types, with 19% (9 patients), as illustrated in Figure 3 and Table 1. The most common type of cleft palate is the cleft of the anterior (primary) palate, accounting for 54%, followed by cleft of the posterior (secondary) palate and the cleft of the anterior and posterior (primary and secondary) palates, each at 29% and 19%, respectively. This aligns with the findings of Simpkiss *et al.,* (1961), Khan *et al.,* (1965), Iregbulem *et al.,* (1982), Morrison *et al.,* (1985), Khrouf *et al.,* (1986), and Ogle *et al.,* (1993) [17-22]. However, studies by Shapira *et al.,* (1999) and Sivertsen *et al.,* (2008) reported that patients with clefts of the anterior and posterior (primary and secondary) palates were the most commonly encountered [23,24].

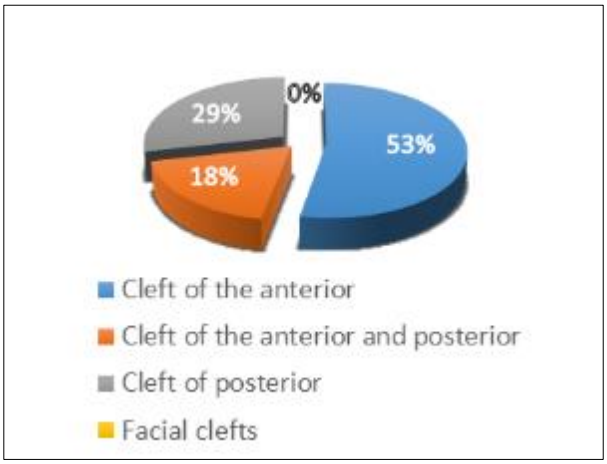

Figure 3 Distribution of cleft types in patients with cleft lip and palate

In Figure 4, it is shown that patients with cleft lip and palate are scattered across nine districts in East Nusa Tenggara. Based on the regional distribution, the highest number of patients is in Belu district, with twenty-one patients (44%), followed by Kupang district with nine patients (19%), South Central Timor district with five patients (11%), Malaka district with five patients (11%), North Central Timor district with three patients (6%), Kupang city with two patients (4%), Rote Ndao district with one patient (2%), East Flores district with one patient (2%), and Southwest Sumba district with one patient (2%).

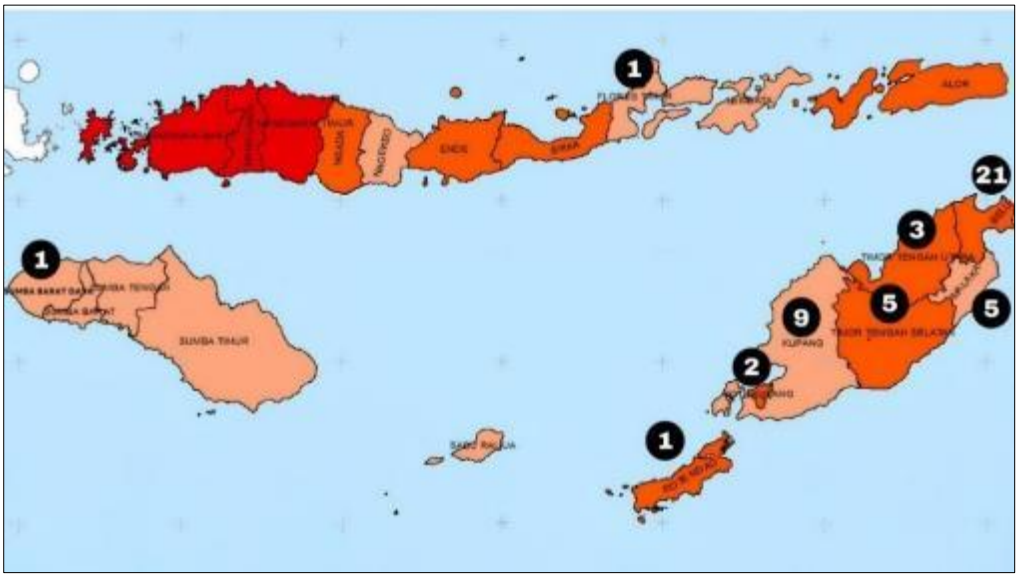

Figure 4 Distribution of patients with cleft lip and palate in the east Nusa Tenggara region

The distribution of patients in east Nusa Tenggara is uneven, with many patients coming from Timor Island, particularly in Belu district (44%). This disparity is attributed to the location of the medical outreach community service activities, primarily in Kupang city on Timor Island. Accessibility issues affect patients from Flores, Alor, and Sumba islands, which

are relatively farther away. On Timor Island, Belu district has the highest number of patients, possibly influenced by lower education, health, and economic levels. According to Kasa et al.'s research, a majority of children in Belu district either do not attend school or drop out early to work and contribute to their family's income. Most residents work as irregular-income farmers. The prevalent belief in the region is that having more children brings more prosperity. Low income combined with a large family size contributes to economic challenges and results in inadequate nutrition for families, especially for pregnant women and children [25].

4. Conclusion

The description of the characteristics of cleft lip and palate patients in east Nusa Tenggara can help determine the incidence rate and risk factors causing cleft lip and palate. This overview facilitates surgeons and researchers in understanding the characteristics of the patients and their families, making it easier to provide appropriate services to both the families and the surrounding community. Additionally, educational activities and health promotion can be implemented effortlessly as preventive, curative, and rehabilitative efforts, especially with the involvement of local government in a multisectoral approach.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest is to be disclosed.

Statement of ethical approval

This case was approved by the local ethical committee, and all procedures were performed in accordance with the principles of the Declaration of Helsinki.

Statement of informed consent

Written informed consent was obtained from the patient or/and guardian for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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