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THE EPIDEMIOLOGY OF PLASTIC SURGERY CASES IN A TERTIARY GENERAL HOSPITAL IN SURABAYA, INDONESIA

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ABSTRACT

Introduction: Medical data registries are useful databases with well-defined data collection mechanisms. A well-designed and implemented registry can give surgeons a wealth of data for research and quality improvement efforts. The aim is to describe the epidemiology of plastic surgery cases in a tertiary general hospital in Surabaya, Indonesia.
Methods: A retrospective assessment of patient's medical records from 2016 to 2019 at the Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia was conducted. A variety of factors were recorded and evaluated, including the patient's age, gender, diagnosis, and year.
Results: We found that among 736 individuals' medical records during four years, burn injuries (17.4%), microtia (11.7%), and orofacial clefts (11.5%) were the most prevalent occurrences. The majority of patients with burn injuries (31.3%), those with microtia (39.5%), those with cleft lip and palate (33%), and those with microtia (between the ages of 15 and 24) were all between the ages of 45 and 64. Patients who were men (52.6%) outnumbered those who were women (47.4%). This data indicates that there were more patients in 2019 than in previous years (397.%).
Conclusion: The analysis of plastic surgery cases revealed a steady increase in the number of cases each year. Burns accounted for the biggest percentage of patient requests for care (17.4%). The majority of patients were male, and 21.9% of them were between the ages of 15 and 24 and were seeking care most frequently.

Highlights:

1. Medical data registries play a crucial role in improving medical knowledge and enhancing patient care.
2. Burn injuries, microtia, and orofacial clefts were identified as the most common occurrences among the patients
3. The demographic patterns observed provide valuable insights into the patient population seeking plastic surgery services.

INTRODUCTION

The global discrepancy in surgical treatment across social and economic strata is a well-known issue. The global burden of disability from surgical disease is estimated to be 11%, which is higher than the combined burdens of HIV, tuberculosis, and malaria[1]. Health is defined by the World Health Organization (WHO) as a condition of physical, mental, and social well-being. This notion of health now encompasses the ability to live a productive social and economic life. Imperfections and abnormalities on the body's surface, whether expressed or perceived, represent a sickness[2]. Plastic surgery must deal with it and attempt to restore health, with the priority in any surgery being to protect life, restore function, and achieve a normal appearance[3]. Plastic surgeons treat burns, severe injuries, infections, and congenital deformities, which are believed to account for half of all surgical problems worldwide[1].

The epidemiology of plastic surgery diseases has only been studied in a few studies. This study's goal is to describe the epidemiology of plastic surgery cases at Airlangga University Hospital in Surabaya.

Dr. Soetomo General Academic Hospital opened in 2011 and is located on Campus C of Airlangga University in Mulyorejo, East Java, Surabaya. This hospital is a category B hospital, which implies it can provide complete medical services, medical experts, and subspecialists, as well as serve as a research facility in Surabaya, East Java.

METHODS

Over four years (2016 to 2019), the records of all patients who presented for cases in Dr. Soetomo General Academic Hospital's cosmetic reconstructive and aesthetic surgery section were evaluated. A specific form was used to collect patient information. Age, gender, and case data were acquired from relevant hospital inpatient and outpatient records. All patients with plastic surgery cases were included in this study, whether they were admitted to the hospital and treated in the operating room or seen as outpatients. The study protocol was approved by the local ethics committees of the institutional research board to conduct this study. The reference number is 201/KEH/2019.

RESULTS

A retrospective clinical analysis was conducted over 4 years, reviewing and evaluating the medical records of 736 patients at the Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia from January 2016 to December 2019. The data revealed an increasing trend in patient admissions from 2016 to 2019, indicating a rise in the number of cases. Specifically, there were 81 cases (11.0%) in 2016, 159 cases (21.6%) in 2017, 204 cases (26.7%) in 2018, and 292 cases (30.7%) in 2019, as depicted in the graph.

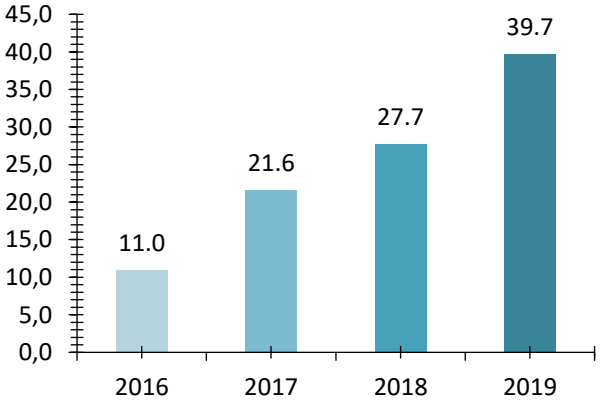

Figure 1. Percent number of cases per year in Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic (2016 to 2019)

We discovered that from January 2016 to December 2019, there were 387 male patients (52.6%) and 349 female patients (47.3%) registered in the Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia.

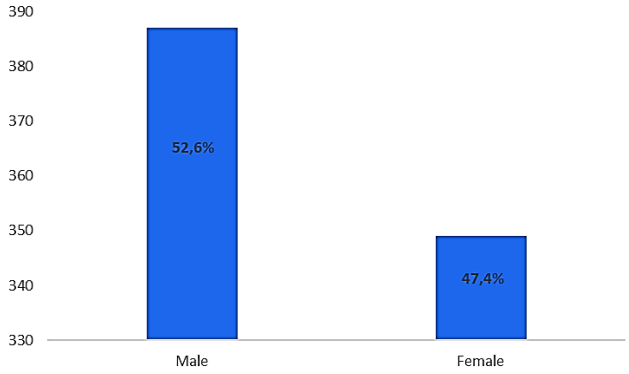

Figure 2. Sex distribution of 736 patients in the Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic (2016 to 2019)

The patients in this study were separated into six age groups: up to four years (90 patients), five to fourteen years (125 patients), fifteen to twenty-four years (160 patients), twenty-four years (160 patients), forty-four years (138 patients), and more than sixty years (62 patients) (8.4%).

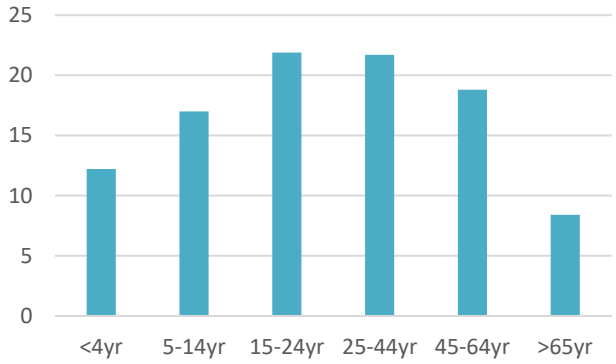

Figure 3. Age Distribution in Plastic Reconstructive and Aesthetic Surgery Unit, Dr. Soetomo General Academic (2016 to 2019)

The number of burn injury patients treated at Dr. Soetomo General Academic Hospital's Plastic Reconstructive and Aesthetic Surgery Unit increased from 2016 to 2019, according to the findings of this study. Burn cases were discovered to be the most common, accounting for as many as 128 instances (17.4%), and the age group with the most frequent burns was 45-64 years (31.3%) (Table 1).

Table 1. Number of burn cases (2016 to 2019)

	Number of cases (n)	**Value n (%)**
Year	128	
2016		10 (7.8%)
2017		28 (21.9%)
2018		30 (23.4%)
2019		60 (46.9%)
Age	128	
<4yr		21 (16.4%)
5-14yr		16 (12.5%)
15-24yr		22 (17.2%)
25-44yr		21 (16.4%)
45-64yr		40 (31.3%)
>65yr		8 (6.2%)

Academic General Hospital Universitas Airlangga, Surabaya is the main hospital in Surabaya for microtia patients in East Java. This is why microtia became one of the most common examples discovered in this investigation (Table 2).

In this study, there were 85 patients treated with an orofacial cleft. Most patients who came were aged <4 years old (33%) and at least patients were aged 4-64 years old (4.7) from January 2016 to December 2019. Following this information, female patients (54.1%) were more frequently discovered than male patients (45.9%) (Table 3).

Table 2. Number of Microtia cases (2016 to 2019)

	Number of cases (n)	Value n (%)
Sex	86	
Male		51 (59.3%)
Female		35 (40.7%)
Age	86	
<4yr		11 (12.8%)
5-14yr		25 (29.1%)
15-24yr		34 (39.5%)
25-44yr		13 (15.1%)
45-64yr		2 (2.3%)
>65yr		1 (1.2%)

Table 3. Number of Orofacial cleft cases (2016 to 2019)

	Number of cases (n)	Value n (%)
Sex	85	
Male		39 (45.9 %)
Female		46 (54.1 %)
Age	85	
<4yr		28 (33%)
5-14yr		26 (30.6%)
15-24yr		11 (12.9%)
25-44yr		16 (18.8%)
45-64yr		4 (4.7%)

In comparison to a previously published study in the literature, corroborate the hypothesis that the occurrence and characteristics of plastic surgery cases differ among countries. This indicates the potential to develop specific preventive and treatment programs for plastic surgery based on the epidemiological patterns observed.

DISCUSSIONS

According to these statistics result, the most prevalent cases in Plastic Reconstructive and Aesthetic Surgery Unit, Academic General Hospital Dr. Soetomo, Surabaya, Indonesia from 2016 to 2019 were burns (128 cases (17.4%)), microtia (86 cases (11.7%)), and orofacial cleft (OC) as many as 85 cases (11.5%).

Burns is one of the most devastating types of trauma in the world 4. Burn injuries have painful physical, economic, social, psychological, and emotional implications that affect one's health and quality of life significantly[5]. Over 95% of burns occur in developing countries. Developing countries account for more than 95% of all burns. Southeast Asia has the greatest burn fatality rate (11.6 deaths per 100,000 people per year), followed by the Eastern Mediterranean (6.4 deaths per 100,000 population per year) and Africa (6.1 deaths per 100,000 population per year)[6].

This study shows that from 2016 to 2019, more patients with burn injuries sought treatment at the Plastic Reconstructive and Aesthetic Surgery Unit at Airlangga University Hospital. As many as 128 burn cases (17.4%) were found to be the most frequent type of injury, while 45–64-year-olds (31.3%) were found to be the age group with the highest percentage of burns. While, according to Ciptomangunkusumo Hospital (RSCM) research, the most common cause of burn damage is a gas explosion (35.7%), followed by flame (26.7%), scald (16.6%), electrical (11.7%), others that include contact and vapor (4.9%), and chemical (4.4%). It also revealed that the age group with the highest incidence was 16-35 years old (269 patients), with a higher number of males admitted 186 (69.1%) than females admitted 83 (30.9%), followed by the age group 36-55 years old (197 patients), with 128 males and 69 females[7]. As mentioned in the literature, more than 60% of burn patients are in their productive years. Burns are more common in the young adult age group because they are of productive age and thus have a higher risk of exposure to the variables that cause burns[8].

Microtia, characterized by a small and/or deformed ear, emerged as the second most prevalent condition in this study. The most severe form of microtia is anotia, where the external ear is completely absent. The prevalence of microtia varies significantly depending on geographic location, with an estimated occurrence of one in every 7,000-8,000 live births. There is a higher prevalence of microtia among Hispanic, Asian, and Native American populations[9,10].

Although various syndromic presentations of microtia have been documented, the most common form (77%-93%) is a solitary, unilateral abnormality[11]. A previous study conducted by The National Birth Defects Prevention Study (NBDPS) in 2019 reported 480 cases (69%) of isolated microtia and 210 cases (31%) of non-isolated microtia. Among these cases, 608 (87%) were unilateral defects, 88 (13%) were bilateral defects, and 3 (1%) had undefined laterality[12].

Microtia exhibits a higher prevalence in males, with a perceived risk that is 20-40% greater than in females. While microtia can occur bilaterally, the majority of cases (77-93%) involve unilateral involvement[9]. Among cases of unilateral microtia, approximately 60% affect the right ear. A previous study conducted in South America identified 1,194 cases of microtia, with males comprising 56.6% of the cases. Among the patients, 82.0% had unilateral microtia, and within this group, the right side was affected in 65.6% of individuals[14]. In this study, there were more male patients with microtia than female individuals. It has also been continuously demonstrated that microtia is more common in males (59.3%) than females (40.7%), and it is more common between the ages of 15 and 24 (39.5%) (Table 2).

One of the most challenging procedures for otolaryngologists and plastic surgeons is the reconstruction of the outer ear. It has been shown to improve psychological and audiological function[15]. Reconstruction of microtia, regardless of kind, necessitates two essential components. The first step is to build an autologous costal cartilage framework, and the second step is to cover the framework with a combination of skin from the cutaneous remnant, neighboring skin, and skin grafts. The majority, if not all, of the rebuilding, can be completed in two stages, with only minor adjustments required beyond these two surgeries. Rib cartilage of sufficient size and form is necessary for optimal restoration to sculpt important structural elements and retain the force required to view these details through the upper skin. Optimal outcomes are achieved by commencing reconstruction for microtia at the age of 9 to 10 years or later. This age range is preferred due to the favorable cartilage width and length, which provide the superior raw material for the reconstruction process[16].

East Java's primary hospital for microtia patients is Dr. Soetomo general academic hospital. Because of this, microtia was one of the most frequent cases found during our examination. Among these cases, the majority were male, and the age group most affected was between 15 to 24 years, accounting for 21.9% of the patients.

Orofacial cleft congenital emerged as the third most common type of case. Approximately 15% of newborns are affected by congenital abnormalities in the craniofacial and oral regions, with orofacial clefts being the most prevalent. Orofacial clefts can manifest in the lip, the hard palate (the root of the mouth), or the soft tissue behind the mouth (soft palate). Additionally, structures surrounding the oral cavity are also involved in these cases[17,18].

The occurrence of congenital defects such as orofacial clefts is estimated to affect one in every 700 to 1000 babies. The prevalence varies across different regions, with higher rates observed in Asia and Latin

America (1 in 500 births), lower rates in the Caucasian race (1 in 1000 births), and even lower rates in the African-American race (1 in 2000 births)[19]. Various factors, including race, ethnicity, socioeconomic status, and geographical location, can influence the prevalence of clefts due to their complex etiology[20].

The prevalence of cleft lip and palate (CLP) exhibits a male predominance, with a male-to-female gender ratio of 1.81. Conversely, cleft palate (CP) has a slightly lower prevalence in males, with a gender ratio of 0.93 [21]. In a specific study conducted at the Yayasan Surabaya CLP center, it was reported that 236 patients underwent surgery in 2017. Among them, CLP patients accounted for the majority (69%), with 130 more male patients treated compared to female patients (106 patients)[22].

Previous studies have shown that Indonesia has the highest number of facial cleft sufferers per population in the world[23]. According to the Smile Train organization's database, show that up to 8,900 newborns in Indonesia are born each year with orofacial clefts. Because they are unaware that the gap can be closed for free, more than half of patients do not receive treatment; some low-income patients even just pay for transportation to the hospital[24].

From January 2016 to December 2019, 85 patients with an orofacial cleft were treated at Academic General Hospital Dr. Soetomo, with the majority of patients being under the age of four (33%). Female patients (54.1%) were found to be more prevalent than male patients (45.9%). The best period for palate repair with favorable postoperative results is between the ages of 3 and 6 months.

The majority of patients for treatment of an orofacial cleft were under the age of four (33%) between January 2016 and December 2019. There were 85 patients in this study. Following this information, female patients (54.1%) were more frequently discovered than male patients (45.9%) (Table 3). Lip and palate repairs are best performed before the age of one-year-old to ensure positive postoperative outcomes.

Our study has certain limitations. Because the sampling period was limited to three years and we only reported the three most common cases, we were unable to present a detailed picture of the most common cases of plastic surgery at Airlangga University. While the strength of this study lies in its clear and concise summary of the key findings presented in the study. It effectively highlights the main results, such as the steady increase in plastic surgery cases over the years, the prevalence of burn injuries, the majority of male patients, and the age group most commonly seeking treatment. By succinctly summarizing the findings, it provides a comprehensive overview of the study's main outcomes in a straightforward manner.

CONCLUSION

The data from the Plastic Reconstructive and Aesthetic Surgery Unit at Dr. Soetomo General Academic in Surabaya from January 2016 to December 2019 revealed a significant increase in the number of plastic surgery cases over the years. The highest number of cases occurred in 2019, with 292 cases, representing 39.7% of the total cases during the period. Among the various types of cases, burns were the most prevalent, accounting for 17.4% of all cases. The majority of patients seeking treatment were men (52.6%), and the highest percentage of patients fell within the age range of 15 to 24 years (21.9%). These findings provide valuable insights into the plastic surgery landscape at the hospital and highlight the specific demographics and conditions that require attention and specialized care.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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None.

AUTHOR CONTRIBUTION

DIR and LBA were including preparation and data gathering, RP writing the manuscript and analysis drafting, and ILP revised and approved for publication of this manuscript.

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