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AN EPIDEMIOLOGICAL STUDY OF PEDIATRIC BURNS AT GOA MEDICAL COLLEGE AND HOSPITAL

Epidemiology

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ABSTRACT

Introduction: With epidemiological data of burns, we understand the situation related to pediatric burns, affected population, gender and age group susceptibility and mechanism of burns. This data helps us to take necessary action for prevention and treatment of burns. Because of the need to establish specialized burns unit in the state, it was essential to have sufficient data related to burns especially for pediatric age group to give specific provisions in the new unit.

Methods: The study was conducted to gather data of pediatric burns patients admitted in the Plastic Surgery ward of Goa Medical College and Hospital for a period from June 2015 to March 2018. Demographic characteristics (age, sex), burns related data (incidence, type, mechanism, percentage), and time of presentation, management of burns were noted, studied and compared.

Results: A total of 271 patients were treated for burns over a period of 35 months: from June 2015 to April 2018. In this series males (56%) were affected with burns more than females (44%) with 188 patients were less than 5 years of age. All burns had occurred accidentally in domestic environment, with no suicidal or intentional burns. More than 76% of the patients were presented within 6 hours of the incident. 75% of the patients had less than 10% of total body surface area as burn wounds. Scald burns was the most common type treated with collagen application and paraffin gauze dressing. Only 4 patients had deep burns needed surgery in the form of skin grating. 63% of the patients needed treatment on OPD basis or hospital stay of less than 5 days. Mortality was very low about 2.21% in this series.

Conclusion: This epidemiologic study guide us to establish a specialized burns unit having good infrastructure, create multi-disciplinary team and strict management protocol so that we can prevent burns incidence, reduce morbidity and mortality due to burns and early rehabilitate patients.

KEYWORDS

burns, pediatrics, Goa.

INTRODUCTION

Burns Epidemiological data of past let us understand the situation related to paediatric burns, the affected population, gender and age group susceptibility, mechanism by which burns occurs. This data help us to take necessary action for prevention and treatment of burns.

Data is available through National burns registry as well as from WHO; we are able to compare our data with that of other parts of the country. Burns is a global health problem, accounting for an estimated 310,000 deaths annually. The global incidence (all ages) is 1.1 per 100,000, and it varies with geographic location, socio-economic status, ethnic group, age and sex. (1)

India having annual burn incidence of 6-7 million, 10% of which are life threatening, require hospitalization and 50% of those hospitalized succumb to death. Nearly 1 to 1.5 lacs people get crippled and require multiple surgeries and prolonged rehabilitation. Pediatric burns can have long-term physical, psychological, economic, and social implications for patients and their families with ongoing treatment, rehabilitation, and the need for regular interventions (2). However, the global incidence of hospitalized pediatric burn patients is unknown. (3)

Burns in children are reported to be third most common cause of death in children aged between 5 and 14 years. (4) The incidence of burn injuries is highest among children below 4 years of age, with responsible factors ranging from children's impulsiveness, lack of awareness, higher activity levels due to natural curiosity, and total dependency on caregivers. Epidemiological data on pediatric burns can provide vital information for developing prevention strategies, thus reducing the frequency of such burns and the budgetary demands on the health Care system. Such studies from India are few, and most of them have a retrospective design. (5)

Various risk factors attributed to burn accidents were low socio-economic conditions, poor living conditions, illiteracy, overcrowding and floor level cooking, on either kerosene pressure stove or an open fire. (6) Unsafe uses of fire for light and cooking, unstable electrical equipments and open wires and sockets as well as unguarded use of chemical in houses and industries have been prevalent in India.

This present study is a retrospective evaluation of 35 months data collected from Burns and Plastic Surgery Department at The Goa medical college and Hospital. As it is the only tertiary care hospital in the State, almost all burns victims are referred here from peripheral hospital. So the data which will be collected would give us statistical idea about the burns cases affected in the state of Goa.

There has been a shift in burn care from general emergency hospitals to specialized burn units/centers. Advances in burn treatment contributed largely to improved outcome and lower in-hospital mortality. (7) As there was no specialised burns unit in the state, and there was a proposal for the new burns unit establishment with the Plastic surgery department, it was essential to have sufficient data related to burns especially for paediatric age group to give specific provisions in the new ward so whatever data was collected in this research study would be used to fulfill the following aims.

AIMS AND OBJECTIVES

1. To study the incidence of paediatric burns in the state of Goa
2. To describe the factors responsible for burns
3. To understand the consequences of burns
4. To study results of burn management.
5. To understand the complications of burns in paediatric age group
6. To suggest the preventive measures for burns
7. To Study the requirements of paediatric beds for new burns ward.

MATERIALS AND METHODS

The study was conducted in inpatient department of Plastic Surgery of Goa Medical College and Hospital. The hospital is located in North district of the state of Goa and caters to a population of around 15 lakhs. The department had an average admission of around five patients per day. The study was proposed for the period during which the department admitted acute burns in pediatric age group along with patients for plastic surgery in the same ward.

This is a Retrospective study, involved data collection of Pediatric burn patients admitted in the Plastic Surgery ward for a period from June 2015 to March April 2018. All patients having acute burns injury were included in the study. Patients suffering from other than acute burns, post burns deformity or patients admitted for other type of plastic surgery were excluded from this study.

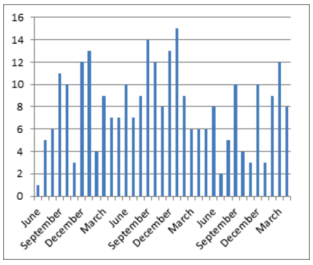
The data was analyzed using graph and charts, comparing independent variables included in the study like demographic characteristics (age,

sex), burns related data (incidence, type, mechanism, percentage), time of presentation and management of burns.

Ethical clearance for the study was taken from Institutional Review Board of Goa Medical College and Hospital after following necessary formalities.

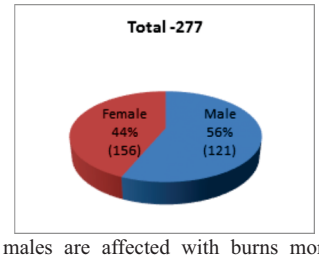
RESULTS

1. Month wise Incidence of Burns



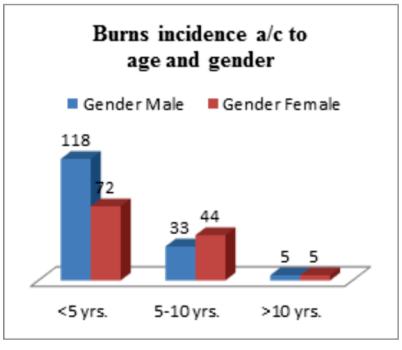
This diagram shows month wise incidence of burns over a period of 35 months starting from June 2015 to April 2018. Total 277 patients were treated including major as well as minor burns patients who needed outpatient or indoor patient treatment. Highest incidence of burns presented during the month of January 2017 while lowest is during the first month June 2015.

2. Burns incidence according to Gender



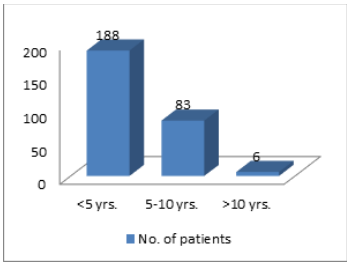
In this series males are affected with burns more than females amounting 56% of total.

3. Burns incidence according to age



Above diagram differentiates patients according to specific age groups. Children less than 5 years of age forms maximum numbers affected by burns.

4. Burns incidence according to age and gender



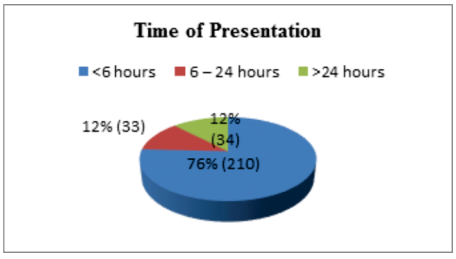
This chart shows distribution of different age group patients in relation to gender. In the age group of patients of less than 5 years of age, males are affected maximally in no. which coincides with the overall male predominance in whole series.

5. Mechanism of burns

Mechanism	No. of patients
Accidental	277
Suicidal	0
Homicidal	0

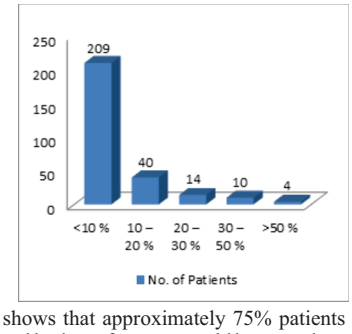
As this is a paediatric series, all burns victims are only accidental. Most children had scald burns due to accidental splash or spillage of hot water, milk or liquid food, fall in vessels of hot liquid. Few children of higher age group were affected due to flame burns or firecrackers blasts.

5.Time of Presentation of burns patient at hospital after accident



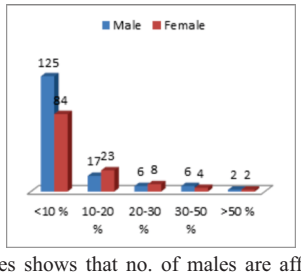
In this series, most of the patients (76%) were presented within six hours, which may be attributed to the alertness of parents due to their educational status. Few children presented late because of remoteness of their villages.

6. No. of patients affected with %TBSA



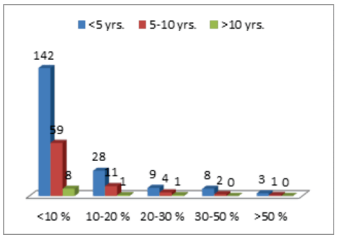
Above chart shows that approximately 75% patients had burns less than 10% of total body surface area could be treated as outpatients as % of burns is a very important indicator to decide for admission to the hospital.

7. No. of patients according to gender affected with %TBSA



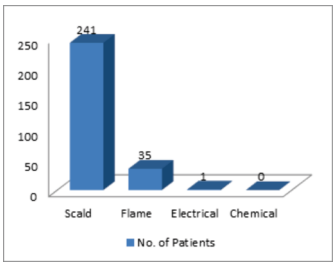
The above figures shows that no. of males are affected more than females in less than 10% burns, while they are more affected in major burns.

8. No. of patients according to age affected with %TBSA



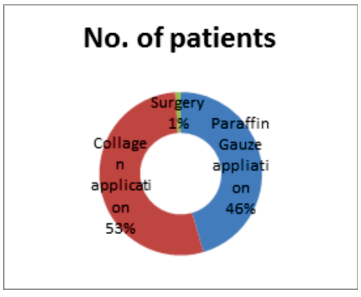
This chart depicts children less than 5 years of age suffered from minor burns. Very few children suffered with major burns.

9. Incidence of Burns according to Type



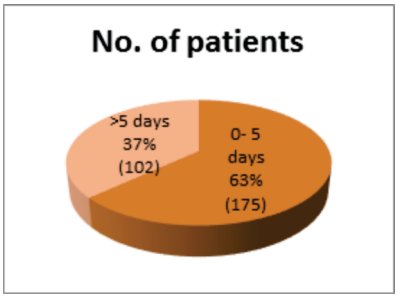
Above figure shows that the most common type of burns in paediatric age is scald burns due to hot liquids. Electric and chemical burns are very rare.

10. Treatment modalities



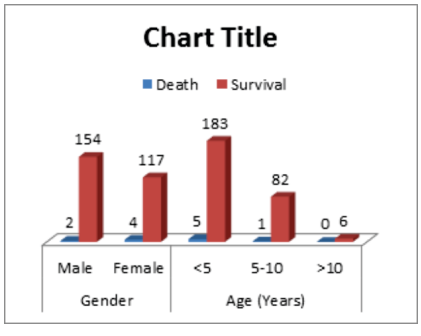
As most patients were suffered from 2nd degree superficial burns, almost all children were treated with conservative management including Collagen sheets application to 53% children and 46% were treated with paraffin gauze dressings. Only 1% patients were needed surgery in the form of skin grafting.

11. Hospital stay



Above graph shows that 63% were children required burns treatment as outpatient basis or few days of hospitalization.

12. Mortality due to burns



The above graph shows mortality is very less (2.21%) in this series affecting more females than males and less than 5 years of age. This mortality is related to percentage and depth of burns. Most common cause of death is sepsis.

DISCUSSION

Burns is a preventable injury can be more severe in children than as seen in adults. It may lead to physical, social, and psychological impairment with advancements in fluid resuscitation and advent of surgical intervention and critical care due to the incident itself as well as post burns scarring and contractures. (8) Due to an unorganized sector, burns related data is highly unavailable, though major work is being done in the government sector. (5)

As an only tertiary care center in the state, where all facilities and expertise of plastic surgeons is available at a minimal cost, almost all burns patients from urban and rural health centers are referred to and treated by our burns and plastic surgery department of Goa Medical College Hospital.

This study was carried out on 271 pediatric acute burn patients to study the epidemiological data among people and analyze various factors which influence their management and outcome. Dhopte et al(5) published the data to reflect high incidence of burn-related injuries in north part of India.

Males (56%) were affected more than females (44%), similar to reports from previous studies. This may be attributable to the mischievous nature and greater activity levels of boys. (9)

Infants and toddlers learn to be mobile at this age. They start actively searching and reaching out to their environment and readily encounter hazards in the home. Children between ages 1 and 5 in our study, were seen to be at the greatest risk of all. It is attributed to the fact that children are many times left unattended at home and they are too young to understand the dangers of being in the vicinity of injurious agents. Our study showed almost 70% of the patients were below 5 years of age, and had male sex predominance, both of which conform to other studies on pediatric burns. (8, 10, 11)

Scalds (89%) were predominant in patients of age less than 5 years. of our patients, followed by older children who sustain injury caused mainly by flames (13%). This data is highly similar to other studies. (5, 9, 12, 13, 14, 15, 16, 17, 18)

According to Powar et al (8), scald is most common form of burns in patients of less than 3 years of age, while in older children; flame burns are more common caused by household fires and Firecrackers.

Scalds were caused by hot water, hot tea, or milk. Though only one patient having electric burns in our study but children sustained electric contact burns in many instances (11, 19, 20) as high as 25% (8).

All burns injuries have been caused due to accidental burns and all have occurred in a domestic environment in or around their own houses same as noted by Verma et al (9) and Lal ST et al (11).

In our study, no patient had suicidal burns, while Dhopte (5) et al found few suicidal burn patients all were females. Powar et al (8) noticed an alarming increase in suicidal burns (6.5%), in children of 10-15 years of age. We did not get any cases of intentional burns due to child abuse as like Powar et al(8).

Time of presentation at the hospital after the incidence of burns is very important in view of the management of burns is concern. In our study 76% patients were arrived in less than 6 hours of accident that leads to faster treatment and better survival of patients.

Most patients (n= 268) have partial thickness burns, were treated with the application of collagen or dressed with paraffin gauzes and a very few have full thickness burns which required (n=3) skin grafting. Powar et al(8) showed 70% patients required surgical intervention of one form or the other. It is very well depicted in our data that about 75% of them had less than 10% of TBSA burn and 15% have less than 20%.

The overall death rate in our study was calculated to be 2.21%. Mortality was found to be higher in the younger age group, in females, and in extensive burns more than 50%TBSA. Sepsis remains the major cause of death. Mortality rates in our unit have been low and of acceptable compared to other data. (8, 21, 13)

63% patients required either outpatient based treatment or a stay in hospital for less than 5 days. Only 3 patients required surgical intervention in the form of skin grafting. Average hospital stay was 17.56 days in the study by Powar et al (8).

CONCLUSION

This study provided us epidemiology of pediatric burn patients in the state. With this information, we have established a specialized burns

unit having good infrastructure. Along with a dedicated multi-disciplinary team and strict management protocol, we aim to reduce the morbidity and mortality due to burns in pediatric age group. As prevention is more cost effective, strategy is planned and necessary measures are taken to educate people in the society. Physical rehabilitation program is also formatted to help patients to prevent post burns contractures and early normalize their routine life.

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