



Study of Cases of Fire Cracker Burns Injury During Deepawali Festival

KEYWORDS

firecracker Burns injury, facial Burns

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ABSTRACT **Setting and Design:** A hospital-based prospective study of firecracker-related injuries was carried out at a municipal hospital in Ahmedabad. **Materials and Methods:** 30 patients attended the emergency burn care out-patients clinic during October & November 2014 pre-Diwali, Diwali and post-Diwali days. A disaster management protocol is revoked during these 3 days under the direct supervision of the Ministry of Health and Family Welfare, Government of Gujarat. **Results :** Most common culprit firecracker for burns is kothi also called as anaar. 80% cases were of 2nd degree superficial burns. 90% cases were males in gender. 58% cases had hand burns. Most common age group is 6-10 yrs **Conclusions:** In spite of legislations and court orders, the number of patients is on the rise. The implementation agencies have to analyse the situation to find a way to control this preventable manmade accident. Websites, emails, SMS, social sites, etc. should be used for public education, apart from conventional methods of public awareness.

Introduction

Fire crackers are commonly used during deepawali festival because of the sound, sparks and burst of colors. Its well known fact that whenever firecrackers are used there is always a risk of burns injury. Most common parts involved are hands, face and thighs.

Material and method

This is a prospective case series of patient admitted in LG HOSPITAL of AMC MET Medical college during month of october and november, 2014 festive season of deepawali.

A total of 30 firecrackers burns patients attended in LG hospital during deepawali festival 2014 out of which 9 patients got admitted and treated as indoor patient & rest on outdoor basis. 6 patients were of facial burns and 2 patients had trouser pocket burns with involvement of thighs and perineum & 1 patient had hand burn.

Age of patients were between 3 yrs. to 14 yrs.. Mean hospital stay was 15 days.

Case 1

- A 10 yr male admitted with approx 13 percent trouser pocket fire cracker burn. (2nd degree superficial to deep.)

Initially managed conservatively with dressing. Later on 25 day STG was done over thigh.

Day 1 image 1



Day20 image 2



Case 2

- A 7 yr male patient came with 14 percent 2nd degree sup to deep trouser pocket fire cracker flame burn.

- Managed conservatively with dressings.

Day 1 image 3



Day 20 image 4

**Case 3**

A 8 yr male child admitted with 5 % 2nd deg superficial facial burn by fire cracker called kothi

Managed conservatively with dressings.

Day 1 image 5



Day 7 image 6



Day 20 image 7

**CASE 4**

•A 10 yr male child came with 6 % 2nd deg sup fire crack-er burn by firecracker remnant explosive.

Application of collagen was done over wound on the same day.

Day 1 image 8



Day 1 image 9



Day 7 image 10



- Healed wound was found on day 7.

Case 5 & 6

- A 13 yr old boy with 5% 2nd deg superficial fire cracker facial burn.

Image 11



image 12



- A 6 yr old boy with 3% 2nd deg superficial fire cracker facial burn

- Both cases managed conservatively.

Case 7

A 3 yr old male child came with 2% firecracker flame burn.

Patient was managed conservatively with dressings.

Day 1 image 13



Day 10 image 14



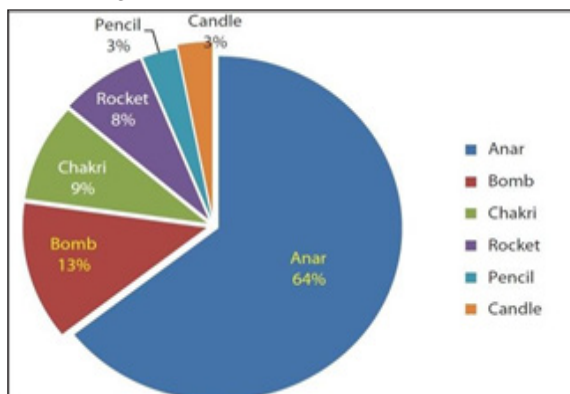
- A 10 yrs. male child came with 6 % 2nd degree superficial facial burn by a fire cracker called kothi.

- Managed conservatively with dressing.

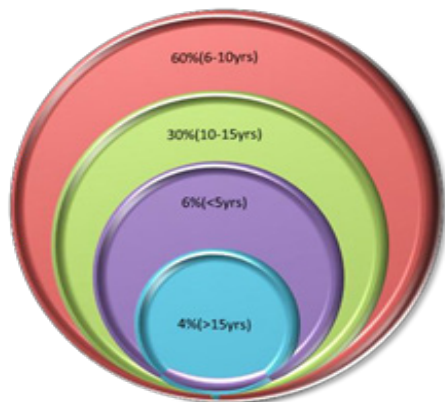
Rest all were treated with conservative treatment either on out patient or indoor patient basis.

Results

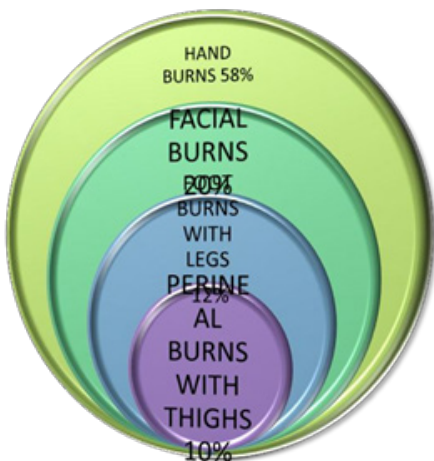
TYPE OF FIRE CRACKERS CAUSING INJURY AROUND DIWALI FESTIVAL



COMPARISON OF AGE GROUP OF PATIENTS



COMPARISON OF AREAS OF BODY INVOLVED IN FIRE CRACKER BURNS



Result

Most common culprit firecracker for burns is kothi also called as anaar. 80% cases were of 2nd degree superficial burns. 90% cases were males in gender. 58% cases had hand burns. Most common age group is 6-10 yrs

Prevention

Prohibit children less than 14 years old from using fireworks and supervise older children. Read and follow all warnings and instructions. Only use fireworks outdoors and keep them away from houses and flammable materials. When using fireworks, have a bucket of water nearby. Be sure other people are out-of-range and a safe distance away before lighting fireworks. Never ignite fireworks in a container (especially a glass or metal container). Never experiment or attempt to make your own fireworks.

Alcohol and fireworks do NOT mix. Always store your fireworks in a cool dry place. Only light one item at a time. Never try to re-ignite malfunctioning fireworks. Never throw or point fireworks at another person. Never carry fireworks in your pocket. Always read and FOLLOW directions on the label.

As the fireworks are legal where we live and you decide to set them off on your own, be sure to follow the provided safety tips.

Firecrackers are commonly used during celebrations be-

cause of their sound, sparkle and sudden burst of colours, expressing the festive mood. They are used during Tihar in Nepal, Hari Raya in Malaysia, Day of Ashura in Morocco, Guy Fawkes Night or bonfire night in the United Kingdom, Independence Day and Halloween in the USA, Bastille Day in France, Spanish Fallas and New Year's Day in Guatemala, Chinese New Year by the Chinese and many other festivals all over the world.

India is a large country with 1.21 billion population, with a huge diversity in culture and social events. The epidemiology and pattern of firecracker injuries also differs from place to place. Another major hospital in India reported 154 patients of firecracker injuries in 10 years. Puri *et al.* in 2009 have mentioned that there had been a decrease in the prevalence of firecracker injuries over 10 years of their study period. Firecracker injuries in the USA affected approximately 10,000 persons annually from 1980 to 1989 as per the National Electronic Surveillance System, while during 1990-2003, 85,800 paediatric firework-related injuries were treated. In the UK, the number of firework-related injuries peaks during Halloween and Guy Fawkes Night. In Denmark, over a 12-year period from 1995-1996 to 2006-2007, there were 4447 patients of firecracker-related injuries during 2 days of New Year. Injuries caused by fireworks are a national problem in Greece too. The reported incidence is 7 per 100,000 children annually, out of which 70% are in the age group of 10-14 years. Hence, firework-related injuries are encountered the world over. Both the developed and developing countries are facing the problem of firecracker-related injuries in large numbers. These are the national statistics of different countries.

This is in spite of the efforts taken by many government and non-government agencies in the form of legislations, amendments, prohibitive orders, educational programmes, etc. to prevent firecracker-related injuries. This is partly because of poor implementation of the regulation. This may also partly be due to the increasing popularity of our hospital in the field of burn care, especially during these 3 days around Diwali festival. Many patients travelled long distances to report to this hospital for their primary care. There are many other facilities in Ahmedabad for treating firecracker-related injuries. However, many of the patients preferred to take treatment at our institute because of the prompt attention and good quality treatment that they receive.

In the present series of patients, the age ranged from 1 to 88 years. Majority of the patients fell in the age group of 6-15 years. This is like most of the earlier studies in which the commonest group affected was formed by children below 16 years of age. 1,3,7,8,9 In the USA, high incidence of firework-related injuries among children has been reported. In different reports, children below 15 years formed 40-50% of the victims. 10,11,12 It was observed that the states in USA which are liberal in allowing fireworks for personal use have 7 times greater incidence than the states where more restrictions are imposed. 10 It has been suggested that public fireworks should be encouraged and fireworks for individual use should be banned. 1

Firework-related injuries are considered as preventable, and to reduce their menace, many countries have formulated legislations during the past two decades. The efforts of the government and the legislative bodies have given mixed results. National Electronic Injury Surveillance System data in 1994 suggested banning the rocket, restrictions in access to young ones and educational pro-

grammes to reduce firework-related injuries.² Fogarty and Gordon (1998)⁸ and Puri *et al.* (2009)⁹ have recommended restriction in the use of firecrackers by children under 5 years of age. Public education in schools, strict standardisation of firecrackers, supervision by adults, restriction in personal use of firecrackers and promotion of public display of firecrackers are the other means suggested.

In the UK, Banger firework was banned in November 1996. The Firework Act 2003 and The Firework Regulation 2004 banned purchase and possession of firecrackers around bonfire night by children under 18 years of age. Edwin *et al.* (2008) noticed that there was a positive impact of this ban and in 2004, the injuries reduced to 83% of previous years.^[16] Prophylactic actions in the form of change of legislation, implementation of legislation and dissemination of information were effective in reducing the incidence significantly in Denmark.^[17]

In New Zealand, a bill was introduced in the parliament for tighter restriction on the sale of fireworks in March 1992. However, after the analysis it was concluded that a complete ban on the public sale of fireworks is not required.

On the contrary, Northern Ireland relaxed the legislation regarding sale and use of firecrackers during Halloween period in 1996 to bring it at par with UK. The 2- year prospective analysis of injuries showed that liberalisation of the law on firecrackers did not result in a significant increase in injuries requiring hospital admissions in their country.¹⁰

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Conflicts of interest: None declared

Ethical approval: Not required.

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