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Epidemiological Investigation of Burn Injuries among School Going Children: Findings from Pak-Italian Modern Burn Center, Nishter Medical University, Multan

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Abstract

Objective: The purpose of this study was to explore the epidemiology of burn injuries among school going children at Pak-Italian Modern Burn Center Nishter Medical University Multan. **Methodology:** The sample of this cross-sectional study was consisted of 150 school going children from which 86 were boys and 64 were girls between the ages of 5-12 years, studied from February 2022 to March 2023. A self-administered questionnaire was used which include the demographic information of the family of burn children, Source of burn injury, Type of burn injury, place of burn injury, body area that was burnt, TBSA, Interviews were taken from the caregivers of the children with burn injuries admitted in the Pak-Italian Modern Burn Center Multan. Children other than South Punjab, children with mental retardation, cerebral palsy, epilepsy and physically handicapped children were not included in the study. **Results:** The findings of this study indicated that the majority of the children with burn injuries 75% were belonged to rural areas. 57% burn injuries were occurred with boys, 84.6% children belonged to poor families. 30.6% children were burned with fire and 26% were burned with hot water. 42.6% children were burned during playing with fire and 38.6% were burned during playing around the burn areas. 30.7% children have 11-20 TBSA

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and only 4.6% children had above 40 TBSA. 29.4% children have upper limb burn injuries and 23.4% have lower limb burn injuries. Conclusion: we found that playing with fire and playing around the burning areas were the main causes of burn injuries among school going children and boys have more burn injuries as compared to girls. There is need to give awareness about burn injuries to school going children.

Key Words: Burin Injuries, School going Children, Epidemiology,

Introduction

Significant morbidity and mortality are caused by burn injuries worldwide [1]. About 300,000 individuals per year, mostly from low- and middle-income nations, are killed by this type of injury. When a child suffers a burn injury, the effects are often more severe and always affect the entire family [2]. One study found that among children in Bangladesh, Colombia, Egypt, and Pakistan, 17% experienced temporary handicap and 18% experienced permanent disability as a result of their burns [3]. Approximately one-fourth of all burn injuries are sustained by children younger than 16 years old; many casualties are very young, in the age range of 5 years or younger [4]. Information on burn injuries is primarily documented through hospital-based surveys, and there is a dearth of data from population-based epidemiological surveys. According to previous research, children are more likely to incur burn injuries based on their age, sex, and place of residence [5].

Worldwide, burn injuries are a prevalent cause of stress, especially for the young who will have to go on to live productive and active lives. Burn injuries continue to be a leading source of morbidity and mortality in South and Southeast Asian countries, including Pakistan, according to published research. After car accidents and drowning, burns are now the third leading cause of death among children [6]. In industrialized nations, burns account for between 2% and 6% of all injuries sustained by children. Approximately 25% of burn victims seen by pediatric emergency rooms are younger than 5 years old [7]. This is of particular concern among children who incur burn related injuries regularly because of the correlation between age and total body surface area and the severity of the burn. If more than 10% of a child's body surface area is burned, without proper fluid replacement, the child may go into shock. Children's skin is more delicate than an adult's, thus even little burns can cause serious damage to a child. Children in our culture are more likely to suffer avoidable burns at home [8]. According to a recent study conducted in Karachi, burns are the second leading cause of injury among children younger than 15 years old. Bangladeshi researchers found that using kerosene lamps for lighting or not having a door between the kitchen and the rest of the house increased the incidence of burn injuries among youngsters [9]. Young children, defined as those aged 4 and under, are more likely to suffer from scald burns than older children, who are more likely to be burned by open flames. Young children spend much of their time at home, which makes it a prime location for burn injuries. Children are more likely to suffer

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from burns than adults because they lack the experience and maturity to recognize risky situations, act responsibly when they encounter them, and react appropriately when they do [10].

Burn injuries were found to be three times more common in children aged 1 to 4 than in those aged 15 to 17. According to research, Children are more likely to suffer burn injuries in remote locations. Children most commonly suffered burns via contact with hot substances, flames, or objects[11]. Most burn accidents happen between 7 and 10 in the morning, and most commonly occur in the kitchen, the yard, and the living room. In a study, who investigated the causes and risk factors of burns in children treated at PIMS Hospital, reported that scalds were the leading cause of burns among children aged three to six. Most burn injuries occurred in the home, most were recorded during the winter, and most often affected parts included the hands and upper limbs [12]. A study discovered that total body surface area (TBSA) was associated to survival and length of hospital stay, and that children burned by petrol flames have a worse chance of survival than children burned by scalds [13].

Method

This cross-sectional study was conducted on school going children with burn injuries at Pak-Italian Modern Burn Center Nishter Medical University Multan. The sample of this was consisted of 150 school going children with burn injuries. This study was conducted during the February 2022 to March 2023. A self-administered questionnaire was used which include the demographic information of the family of burn children, Source of burn injury, Type of burn injury, place of burn injury, body area that was burnt, TBSA. After taking the approval of Ethical Committee of the hospital, interviews were taken from the caregivers of the school going children with burn injuries admitted in the Pak-Italian Modern Burn Center Multan. Children other than South Punjab, children with mental retardation, cerebral palsy, epilepsy and physically handicapped children were not included in the study. The age arrange of children was 5-12 years. The questionnaire was developed through analyzing the different studies conducted about the casual factors of burn injuries in children. 10 studies were selected through the keywords of causes of burn injuries, burn injuries in children, causes of burn injuries in children on PubMed and Google Scholar. The data was analyzed through SPSS version 23. Only frequency and percentage were measured in this study because this study was only aimed to investigate the prevalence and factors of burn injuries in school going children.

Results

Table 1: Demographical Characteristics of Participants (N=150)

Age of Children	f(%)
5-8 Years	97 (64%)
9-12 Years	53 (36%)
Gender of Children	
Boys	86 (57%)

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Girls	64 (43%)
Residence	
Rural	112 (75%)
Urban	38 (25%)
Informant	
Mother	96 (63.5%)
Father	28 (18.5%)
Grand Parents	16 (10.5%)
Relative	10 (6.5%)
Education of Respondents	
Uneducated	75 (50%)
Primary	36 (24%)
Middle	22 (14.6%)
Matric	13 (8.7%)
Above Matric	4 (2.7%)
Socioeconomic Status	
Poor	127 (84.6%)
Middle Class	15 (10%)
Upper Middle Class	8 (5.4%)
Number of Siblings	
1-3	74 (49.4%)
4-6	52 (34.6%)
Above 6	24 (16%)

Table 2: Cause of Burn Injury (N150)

Source of Burn Injury	f(%)
Water	39 (26%)
Milk	28 (18.6%)
Tea	20 (13.4%)
Fire	46 (30.6%)
Electricity	17 (11.4%)

Table 3 Situations in which burn injury occur (N=150)

Situation	f(%)
Playing around burn area (Kitchen, Stove, boiling liquids)	58 (38.6%)
Playing with fire (Playing with match sticks and burning wood)	64 (42.6%)
Playing around or with electrical instruments	8 (5.4%)
Accidental Burn injury	20 (13.4%)

Table 4 Total Burn Surface Areas (TBSA)

TBSA	f(%)
1-10	39 (26%)
11-20	46 (30.7%)
21-30	40 (26.7%)

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31-40

18 (12%)

Above 40

7 (4.6%)

Table 5: Region of Burn Injury

Region of Burn injury	f(%)
Head and Neck	27 (18%)
Trunk	31 (20.6%)
Upper Limbs	44 (29.4%)
Lower Limbs	35 (23.4%)
Buttocks and Genitalia	7 (4.6%)
Multiple	6 (4%)

Discussion

This study was conducted to investigate the epidemiology of burn injuries among school going children. The age range of the children investigated in this study was 5-12 years. In this study 150 school going children were investigate from which 97 (64%) were between 5-8 years old and 53 (36%) were 9-12 years old. Majority of the burn injuries were occurred with boys which was 57%. The majority of the children with burn injuries were belonged to rural areas which were 75% of the sample. The main reason for burn injuries in rural areas is that there no concept of proper kitchen in the house, people in rural areas mostly cook food in the cortile or veranda. The other major reason of burn injuries in rural areas is that the people in rural areas do not make proper precautionary measures to protect their children from fire. Therefore not only the child burn injuries, adult burn injuries also occur in rural areas of Pakistan as compared to urban areas where there are proper kitchen in most of the homes. According to the findings of this study majority of the children with burn injuries were belonged to poor family background which is 84%. Poverty is a major reason of lack of precautionary measures of fire in rural areas in Pakistan. The major reason of burn injury among school going children was fire which is 30.6% and the second major cause was hot water which is 26% in this study. Electricity is the least cause of burn injuries which in 11% in school going children. The main reasons or situations of burn injuries in school going children were playing with fire or the playing around the fire. Mostly cases of burn injuries in school going children occurred due to playing with fire which is 42.6%. Most of the burn children included in this study were playing with match sticks or other burning objects like burning waste, trying to burn woods and other plastic objects for play. This finding indicates that the playing with fire is the major cause of burn injuries in school going children. Children has curiosity about anything and they want to do most of the thing by self to check them and fire is one of them which children want to try see what happened with fire. The second major reason or situation was the playing around the fire like around the kitchen or cooking areas at the time of cooking meals which was the 38.6%. There is need to educate the school going children about the burn injuries and there should be teams of

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doctors who visits schools and educate the children about burn injuries and taught them precautionary measures about this.

Playing with fire has been a major cause of burn injuries in children. It is a dangerous activity that can lead to serious injuries and even death. The sad part is that most of these injuries are preventable, but children tend to be curious, and they may not know how dangerous it is to play with fire. First and foremost, children need to be taught about the dangers of fire. This should include the fact that fire can spread rapidly and cause significant damage. Parents and guardians should monitor their children and ensure that they do not get access to lighters, matches, and other flammable materials. It is also important to teach children how to safely handle fire and to always have an adult present when they are around fire[14].

Furthermore, parents should create a safe environment for their children. This includes keeping flammable liquids away from children and ensuring that they are stored in a safe and secure manner. Children should also be taught how to identify and respond to a fire emergency. They should know how to use a fire extinguisher and how to contact emergency services in case of a fire. When children do suffer burn injuries, it is essential to seek medical attention immediately. Even small burns can become infected and cause significant pain and discomfort. Parents should also ensure that their children receive proper medical treatment and follow-up care for their injuries[15].

In conclusion, playing with fire is a dangerous activity for children and can lead to serious burn injuries. Parents and guardians should take proactive measures to educate their children about the dangers of fire and create a safe environment that minimizes the risk of burn injuries. When children do suffer burn injuries, it is important to seek immediate medical attention and follow-up care to ensure proper healing.

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