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CHILDHOOD BURNS REQUIRING HOSPITALIZATION IN WESTERN FIJI: A RETROSPECTIVE STUDY

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Running Title: Childhood burns in Fiji

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ABSTRACT:

The objective of this study was to access the causative factors in burn injuries in patients, five years and younger, admitted to the burns unit at Lautoka Hospital. Data was collected for analysis from the Hospital computer database and from case folders. There were 178 burn admissions, most of them under 20% of body surface area (BSA). Among the 178 patients 70 (39.3%) were children of 5 years of age or less; only those data were included in the study. Of the 70 children 92.9% were three years of age or less. The mean age of all the children was 19.8 months. Gender distribution of the children indicated 47 (67.1%) male and 23 (32.9%) were female. Distribution by ethnicity indicated 70.0% ethnic Fijians, 25.7% ethnic Indians and 4.3% were of other races. Clinical examination shows 97.1% were scalding burns and most of them occurred during cooking (44) or serving (22) food. Household electric kettles were involved in causing the burn injuries in 28.5% of the cases.

In conclusion almost all the burns in our present study were due to scalds. The results show a very low incidence of flame, contact, chemical or intentional burns as compared to other studies. Electric kettles were involved in almost one third of the cases.

Keywords: Pediatric burns, scalds, incidence, Fiji

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INTRODUCTION:

Burns are a common cause of pediatric injury worldwide and most of these are caused by hot liquids at home [1]. The mechanism of burn injuries in children is markedly different from that in adults. Whereas flame, chemical and workplace injuries predominate in adults, in children, burns are usually scalds in the home environment [2, 3]. The inherent playful, curious and ignorant nature of children makes them more prone to burn injuries. Socio cultural factors also play a major part in the mechanism

of childhood burns resulting in different causes in different cultures [4,5,6,7,8]. Most childhood burns are not life threatening, but they cause significant pain and physical and psychological suffering. They also entail a huge drain on precious health care resources. The objective of this study was to access the causative factors in burn injuries in patients five years and younger, admitted to the burns unit at Lautoka Hospital.

METHODS:

This was a retrospective study conducted on admissions to the Burns Unit at Lautoka Hospital, Fiji between January 2011 and December 2013. This tertiary hospital is the receiving centre for all burns in the Western Division of the country. It caters to a population of 365379 [9]. Patient data was collected for analysis from the admission register, the Hospital computer database and from case folders retrieved from Medical Records. Burn percentages were calculated using the Lund and Browder chart for children [10].

RESULTS:

There were a total of 178 burn admissions in the Burns Unit in the years 2011 to 2013. Out of these 70 (39.3%) were children of 5 years of age or less and were included in the study.

Table 1: Age Distribution of the 70 children included in the study

Age in years	Number (%)
< 1	15 (21.4%)
1 – 2	37 (52.9)
2 – 3	13 (18.6%)
3 – 4	2 (2.9%)
4 – 5	3 (4.3%)

Of these 65 (92.9%) were three years of age or less. The mean age of all the children was 19.8 months; the youngest child was 4 months old. Table 1 shows the age distribution of all the children. Of the 70 children, 47 (67.1%) were male and 23 (32.9%) were female. Distribution of the children according to their ethnicity shows that 49 (70.0%) were ethnic Fijians while 18 (25.7%) were ethnic Indians and 3 (4.3%) were of other races. Clinical examination shows that 68 (97.1%) suffered scalding injury, one had a flame burn and one was burnt with a hot

iron. Of the 68 children who were scalded, 44 (64.7%) were injured during the cooking, 22 (32.4%) during serving of food and only 2 (2.9%) by hot bathing water. Among the 68 scalding burns 20 (29.4%) were caused by the use of electric kettles. Most of the burns (92.9%) were under 20% of BSA.

The number (%) of cases with the percentage burn areas are presented in Table 2:

Table 2: Number (5) of cases with burn percentage

Burn area	Number (%)
1 – 5%	17 (24.3%)
6 – 10%	24 (34.3%)
11 – 15%	16 (22.9%)
16 – 20%	8 (11.4%)
> 20%	5 (7.1%)

In the period covered in this study mortality was recorded; a 13 month old girl with 40% scalds burns, caused after the nanny put the child in a tub of hot water to bathe her. This was the only case in which an intentional motive was suspected. All other burns were unintentional.

DISCUSSION:

Burns are the fourth most common type of trauma worldwide and comprise between three to eight per cent of all childhood injuries [11] and are a major cause of mortality and morbidity, particularly in low and middle income countries (LMIC) where 95% of burn deaths occur [12]. The incidence of burn injuries and their sequela in children have shown a significant decline in developed countries due to better preventive and management strategies [12]. In LMIC implementation of advanced burn management is usually not feasible because of resource competition from other important health care issues such as infections and non-communicable diseases. Thus, for LMIC it is important to understand local causation so that maximum returns on health expenditure can be achieved through properly targeted prevention.

Burns in children five years and less accounted for 39.3% of all burn admissions in our present study and this is comparable to that found by other researchers [13]. Children under three years of age are most prone to unintentional scalds [14]. Their increasing mobility combined

with the lack of knowledge about dangerous objects puts them at risk [15].

Male children outnumber females in most worldwide studies as well as in our study [1, 11, 14, 15]. In the older child, reasons for this gender differences are apparent. In many societies boys tend to play outdoors and are more likely to sustain flame and chemical injuries, while girls may be more involved in kitchen and household work. However it is difficult to explain this gender difference in children less than three years of age. One would expect these children to have similar behaviour and receive similar treatment from caregivers. It is obvious that further thought and study is needed to elucidate this problem [1].
Most burns occurred in the ethnic Fijian population as compared to the local Indian population. Socio cultural and lifestyle factors need to be investigated to find the reasons for this difference between the two major ethnic groups in Fiji.

The scalding burn rate obtained in the present study was 97.1%. Only two children in our study did not suffer a scalding burn. This is in variance with other published studies in which scalds comprise between 59.0 – 92.0% of childhood burns [5, 14, 17, 18, 19] with the rest being flame, contact and chemical burns.

Only in one child (2.9%) in our study was intentional injury suspected (but not proven). This is a very low rate as the incidence reported elsewhere is between 10.0 – 12.0% [19, 20].

The common causes of injury in our study were related to the child accidentally spilling of hot food while it was on the stove or on the floor or on a table. Only two children were injured by hot bath water and this was in a basin and not by running water.

In 29% of cases electric kettles were involved. These kettles are used commonly in Fiji not only for cooking but to heat water for bathing and other activities and are a danger as they are often kept on a table or refrigerator and have trailing cords. This aspect of burn injuries has also been commented upon by J G Ray [16] and Rafii [14, 20].

Awareness on the ways in which children get scalded at home should be disseminated by health care workers to the public. Children should be restricted from entering or playing in cooking areas in dwellings. Some simple child proof barriers for e.g. movable storage shelves can be used for this purpose.

Electric kettle spills can be reduced if families with toddlers can be motivated to purchase the squat (traditional) shaped electric kettle rather

than the currently popular tall, narrow based kettles that are commonly available and are more easily toppled.

CONCLUSIONS:

Results obtained in the present study population indicated that almost all burns in the under five age group are caused by hot liquids. Most injuries occur during cooking and serving food with a significant number involving electric kettles. The incidence of flame, contact, chemical and intentional injuries were very low.

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