

Practices of Paediatric Caregivers on First Aid of Thermal Burns in Ward A3 Parirenyatwa Hospital: A Pilot Study

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Abstract Burn-related injuries are a prevalent burden worldwide. Caregiver practices of first aid have been demonstrated to minimize the effects of burn-related injuries. This pilot study sought to identify practices on the first Aid of thermal burns in Ward 3 at a referral hospital in Harare, Zimbabwe. A quantitative cross-sectional hospital based survey was utilized with a convenient sample of 30 respondents. The respondents involved in the study were between the ages of 20 to 40 years and were caring for a child below 12 years with accidental burns of 10% and below of the TBSA. Structured interviews were conducted. Results showed that caregivers practiced de-blistering and applied a wide range of remedies. Caregivers had varied approaches to covering of the burn injury and different modes of cooling the burns. This calls for a need to close the gap in the practice of caregivers on the first aid of thermal burns.

Keywords Caregivers, Burns, Pediatric

1. Introduction

Practices of caregivers with regards to first aid of thermal burns vary greatly across borders. Basing on anecdotal evidence, practice of first aid in thermal burns for pediatric children by caregivers after burn injury is considered integral in reducing scar formation, infection and chances of surgery. Prompt and appropriate first aid aims to stop the burning process, to cool and cover the burn, and provide analgesia [6]. It has been demonstrated that improper first aid practices can cause an increase in infection in the burnt children [10]. Infection, which is a leading cause for morbidity resulting from immunosuppression, is a complication that can be reduced by prompt first aid practices [4]. This highlights the notion that the practice of first aid in thermal burns by caregivers is of great importance. Infection also increases the period of hospital stay which is a burden to the caregivers and the society. In a developing country, South Africa, an estimated US\$ 26 million is spent annually for care of burns. There were also indirect costs in form of as lost wages, prolonged care for deformities and psychological injury, and diversion of family resources into caring for the injured [15]. The experience of caregivers/ parents on burn injuries

of children is considered to be very stressful because it's unanticipated and the treatment regimen is prolonged, expensive and adds complexity on parental role pressures [12]. A systematic review showed a pattern of children around the age of 10 years representing 80% of the burn population in the Sub-Saharan region and that the typical place for burns was the home [11]. In Zimbabwe recorded information with regards to burns shows that they are among the top ten to be attended to in referral hospitals [16]. A prospective study conducted in Zimbabwe in the 90s showed that thermal burns mainly affect the pediatric population group [8]. A retrospective study conducted at a national referral hospital on burns that had been attended to over a year showed that 73% of patients were children, 90% of the burns occurred in the home setting and were a result of hot water and open fire [7]. It is evident that studies on pediatric burns in Zimbabwe are far between and available literature focuses on the treatment processes that do not include the role of the caregiver in those processes. This study was therefore a preliminary exploration of the practices of pediatric caregivers on the first aid of thermal burns in Zimbabwe.

Conceptualization of variables under study

A care-giver in this study was conceptualized as any person responsible for the care of the child and assisting with activities of daily living immediately before hospitalization and was with the child most for the time during hospitalization in the burns unit at the time of the study. Practice referred to those activities that were performed by

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Published online at <http://journal.sapub.org/nursing>

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the caregivers after a child of below 12 sustained 10% TBSA burns or less. First Aid in this study translated to immediate help provided by the caregiver to a child who had sustained thermal burns before being taken to the hospital. Thermal burns meant burn injuries sustained after a child below the age of 12 years was exposed to either hot water or open fire.

Pediatric for this study referred to a child below the age of twelve who sustained thermal burns and was admitted in burns unit at the national referral hospital in Harare, Zimbabwe.

Study setting

This study was conducted in Ward A3, which is one of the two pediatric surgical units at Parirenyatwa, which is the largest referral hospital in Zimbabwe, located in Harare, the capital.

2. Methods

A quantitative descriptive cross-sectional hospital based survey was conducted. The information was collected through structured interviews because the literacy levels of caregivers could not be ascertained. The sample consisted of 30 respondent pediatric caregivers. Convenience sampling was used to recruit all caregivers available at the time of data collection who met the inclusion criteria. For the purpose of this study, caregivers had to meet the following criteria to be included in the sample:

- Between the ages of 20 and beyond 50 years,
- Willing to participate the pilot study
- Able to speak either English, Shona or isiNdebele languages.

The child of the caregiver had to meet the following criterion for their caregivers to be included:

- The child had to be twelve years and below
- Admitted in Ward A3 at the time of the study
- Had been burnt at home accidentally with thermal burns affecting 10% or less.

3. Results

Results of the pilot study included the demographic characteristics of the respondents and practices of pediatric caregivers on first aid of thermal burns.

Sample demographics

The marital status of respondents involved varied, 3 (10%) of the respondents were single, 14 (46, 7%) of respondents were married, 8 (26, 7%) widowed and 5 (16, 7%) divorced. Of the respondents enrolled 1 (3, 3%) had no child, 10 (33, 3%) had one child, 8 (26, 7%) had two children, 7 (23, 7%) had three children and 4 (13, 3%) had more than three children. None of the respondents lacked formal education, 17 (56, 7%) had gone up to ordinary level, 6 (20%) had gone up to advanced level and 7 (23, 3%) having attained tertiary education. Employment status of caregivers varied having 2

(6, 7%) of the respondents being students whilst 10 (33, 3) of the respondents were formally employed with 4 (13, 3%) respondents being unemployed, 11 (36, 7%) self-employed, and 3 (10%) were retired. Just as the employment status varied so did the monthly income thus 11 (36, 7%) of the respondents earned \$100 or less in a month, while 8 (26, 7%) earned between \$101 and \$300, 4 (13, 3%) earned between 301 and 500 in a month. 3 (10.0%) earned more than \$500 and 4 (13, 3%) of respondents could not indicate their earning for they had mentioned they were unemployed. Every community has its beliefs thus the differences in religion, 2 (6, 7%) of the respondents were traditionalists while the other 27 (90%) were Christians and 1 (3, 3%) was a non-believer. Parirenyatwa Hospital has a large catchment area and is also a referral hospital, reason which explains the variety of places of residence, 3 (10%) of the respondents lived in the rural areas, 7 (23, 3%) lived on a farm, while 4 (13, 3%) lived at a mining area and the rest 16 (53, 3%) lived in urban areas. The minority of the respondents which were seven 7 (23.3%) were males and the majority twenty-three 23 (76, 7%) were females.

Practices of pediatric caregivers on first aid of thermal burns

This variable was explored and described in view of; the caregiver's immediate action when the child was burnt, mediums used to cool the burns, duration of cooling burns, reasons for cooling the burns, the practice of de-blistering the burns and remedies given by caregivers to the burns. Results on this variable generally showed that caregivers' practices were not in line with best practice for wound management of non-complex thermal burns.

The caregiver's immediate action when the child was burnt

Regarding the caregivers immediate action when the child was burnt, 10 (33, 3%) removed the source of the burn from the child, 5 (16, 7%) poured water onto the child, 8 (26, 7%) removed and smothered the clothes the child was wearing and 7 (23, 3%) called for help as their immediate action. In a related study in a different context, saline solution and running tape water were plans of action for first aid when burns occurred [1]. Another study showed that while caregivers did run the burn under cool water, they still remained unsure if this was the correct course of action [14]. This means that appropriate caregiver practice on burns is an important lever in burn wound recovery and the need to reinforce correct practices is imperative.

Duration of cooling burns

The duration of cooling the burns varied for each caregiver and of the 19 (63, 3%) who cooled the burns 5 (16, 7%) cooled for 10 to 20 minutes, 9 (30. 0%) cooled for 1 to 9 minutes and 5 (16, 7 %) cooled for more than 20 minutes. Reasons for cooling the burns were different for each caregiver that is 6 (20, 0%) of the caregivers cooled the burn to stop the burning process and minimize skin damage whilst 13 (43, 3%) cooled to decrease pain and body temperature

following a burn and 11 (36, 7%) did not cool the burn at all. Empirical evidence has however demonstrated that a 20-minute cold water therapy translates to rapid re-epithelialization and scar formation has a better outcome [5]. On average, the caregivers' practice was consistent with expectations of burn management. This is very important with regard to reduction pediatric morbidity in Zimbabwe.

The practice of de-blistering the burns

Following the burn, 13 (43, 3%) of the caregivers did not de-blister the burns, however 13 (43, 3%) had to de-blister in order to remove fluid in the blister, discourage accumulation of pus and promote healing whilst 4 (13, 3%) had to de-blister in order to apply for medicines. This practice is fundamental in this study for it is during this process that different objects are used which will then introduce infection to the child. Evidence shows that de-blistering is a controversial plan of action in wound care. The arguments for preserving the blister cite the importance of the blister fluid protecting underlying tissue from further tissue damage. The school of thought against the practice of de-blistering hinges on issues around healing and ease of access to the wound [13]. The bottom line is that whatever path is followed, use of sterile equipment is key and this is a facet that is essentially not available to the caregiver of a child with thermal burns in Zimbabwe. This means that the practice can be more damaging than it is helpful to the child with thermal burn injuries.

Remedies that were given by caregivers to the burns

Caregivers had different responses for this question, 8 (26, 7%) did not apply anything, whereas 5 (16, 7%) applied betadine and 17 (56, 7%) applying different remedies. Of the seventeen who applied different remedies 4 (23, 5%) used margarine (butter), 2 (11, 8%) used raw eggs, 1 (5, 9%) used toothpaste, 4 (23, 5%) used urine, 4 (23, 5%) used herbs and 1 (5, 9%) used petroleum jelly. In a study conducted in a similar setting in Zimbabwe, results showed that caregivers used various non-therapeutic approaches like urine, crushed cockroaches, aloe vera gel, gentle magic cream, flour and camphor cream [3]. This practice could complicate and result in severe tissue damage, increase hospital stays and negatively affect the outcome of the thermal burn injury.

Materials used to cover the burns and reasons for covering burns

Different materials were used to cover the burn sites for different reasons that are 11 (36, 7%) used a clean piece of cloth, 2 (6, 7%) used a light blanket whilst 3 (10, 0%) used plastic paper and 14 (46, 7%) did not cover the burn at all. Of the caregivers who were enrolled for the study 10 (33, 3%) of caregivers covered the burn site in order to discourage infection, reduce intensity of pain and discourage irritation by flies' whilst 6 (20, 0%) covered the burn to promote adherence of medicines and remedies applied whilst the rest did not cover the burns. Empirical evidence positions that in the pre-hospital management of burns, it should follow that after applying correct mechanisms of cooling the burn, the

burn injury should be covered with a clean, dry material but not necessarily sterile material [9]. The caregivers in the study either used material that could expose the burn to possible infection or did not do anything at all.

Mediums for pain relief

To relieve the child's pain 15 (50.0%) gave paracetamol, 3 (10, 0%) gave traditional herbs whilst 12 (40.0%) gave nothing in order to relieve the child's pain. Experts highlighted that pain relief is of paramount importance in the pre-hospital environment [9]. While practical efforts to relieve pain were done by caregivers, it would be ideal for that relief of pain to come from trained health personnel who would regulate the doses and identify the correct medication for the child.

4. Discussion

Correct first aid or pre-hospital thermal burn injury management is an important lever that prevent complications in children. Caregiver practices on first aid rendered to children have an impact on burn injuries outcome. Inappropriate practices for thermal burn injuries may translate to infection and retrogression in school work for the older child. It also incurs unanticipated costs for the caregivers. While caregivers seemed to be in line with what would be expected of them with regards to cooling of burns, a gap exists with practice related to remedies that are used on the burns. The results of this study are also consistent with those of other low and middle income countries especially Africa. It is therefore imperative to channel efforts towards exposing caregivers to correct first aid practices. Such empowerment efforts would then be expected to impact against reducing morbidity and mortality associated with thermal burn injuries.

5. Conclusions

Pediatric first aid on thermal burns by caregivers in Zimbabwe seems to be uniformed and steeped in tradition and hearsay. As a result, use of non-therapeutic therapies were applied in pre-hospital burn management. The need to improve caregivers' awareness on first aid management of thermal burns is imperative. This will facilitate use of appropriate remedies for burns in the home setting and beyond.

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